

REMARKS

Claims 1-50 were originally presented for examination. Upon entry of this preliminary amendment, which is respectfully requested for the reasons set forth below, claims 1-50 will be cancelled and new claims 51-106 will be pending.

Applicants submit herewith a substitute specification, and replacement drawings. In the substitute specification, Applicants have amended the specification as filed to incorporate disclosed subject matter from the co-pending, commonly-assigned applications referenced on page 1 of the original specification. Pursuant to 37 C.F.R. § 1.125(b) a substitute specification is provided herewith. This substitute specification is provided prior to the payment of an issue fee and does not contain new matter. A marked-up version of the substitute specification showing all the changes (including the matter being added to and the matter being deleted from) to the specification of record is attached and submitted herewith. The substitute specification is also submitted in clean form without markings as to amended material.

Paragraphs 2-7 are amended to display updated cross reference information for previously incorporated references. Paragraph 11 is amended for language purposes only. Paragraphs 172-189 are newly added from previously incorporated U.S. Patent Application Serial No. 09/935,321 (Attorney Docket No. I01.51). Paragraphs 190-206 are newly added from previously incorporated U.S. Patent Application Serial No. 09/935,153 (Attorney Docket No. I01.52). Paragraphs 207-226 are newly added from previously incorporated U.S. Patent Application Serial No. 09/934,616 (Attorney Docket No. I01.53). Paragraphs 24-27, 73, 75-76, and 227-273 are newly added from previously incorporated U.S. Patent Application Serial No. 09/935,248 (Attorney Docket No. I01.54). Paragraphs 28-32, and 274-333 are newly added from previously

incorporated U.S. Patent Application Serial No. 09/934,617 (Attorney Docket No. I01.55).

Paragraphs 33-36, and 334-368 are newly added from previously incorporated U.S. Patent Application Serial No. 09/935,315 (Attorney Docket No. I01.56). Lastly, paragraphs 46-63 are amended to describe newly added figures.

New claims 51-106 are directed to subject matter disclosed in the applications as filed.

No new matter is believed added by this amendment.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone the undersigned at (203)972-0081 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

2/16/03

Date



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Enclosures:

- Appendix A: Clean copy of substitute specification
- Appendix B: Marked-up copy of substitute specification
- Appendix C: Copy of replacement formal drawings and letter to Official Draftsperson



SYSTEM AND METHOD FOR PERSONALIZED DYNAMIC PRICING

(Marked-up Version)

CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** This application is related to the following co-pending and commonly assigned U.S. Patent Applications (the content of each of which is hereby incorporated by reference herein for all purposes):

**[0002]** U.S. Patent Application Serial No. 09/935,321 [ \_\_\_\_ ], filed August 22, 2001 [ \_\_\_\_ ] (on even date herewith) for "SYSTEM AND METHOD FOR CONDUCTING A SELL-SIDE AUCTION" (Attorney Docket No. I01.51 and Client Docket No.: YOR920010409US1);

**[0003]** U.S. Patent Application Serial No. 09/935,153 [ \_\_\_\_ ], filed August 22, 2001 [ \_\_\_\_ ] (on even date herewith) for "SYSTEM AND METHOD FOR CONDUCTING A BUY-SIDE AUCTION" (Attorney Docket No. I01.52 and Client Docket No.: YOR920010410US1);

**[0004]** U.S. Patent Application Serial No. 09/934,616 [ \_\_\_\_ ], filed August 22, 2001 [ \_\_\_\_ ] (on even date herewith) for "SYSTEM AND METHOD FOR CONDUCTING A TWO-SIDED AUCTION" (Attorney Docket No. I01.53 and Client Docket No.: YOR920010411US1);

**[0005]** U.S. Patent Application Serial No. 09/935,248 [ \_\_\_\_ ], filed August 22, 2001 [ \_\_\_\_ ] (on even date herewith) for "SYSTEM AND METHOD FOR ESTABLISHING CUSTOMIZED LEASING TERMS" (Attorney Docket No. I01.54 and Client Docket No.: YOR920010412US1);

**[0006]** U.S. Patent Application Serial No. 09/934,617 [ \_\_\_\_ ], filed August 22, 2001 [ \_\_\_\_ ] (on even date herewith) for "SYSTEM AND METHOD FOR FACILITATING TRANSACTIONS AMONG DISPARATE ENTITIES" (Attorney Docket No. I01.55 and Client Docket No. YOR20010413US1); and

**[0007]** U.S. Patent Application Serial No. 09/935,315 [ \_\_\_\_ ], filed August 22, 2001 [ \_\_\_\_ ] (on even date herewith) for "SYSTEM AND

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METHOD FOR BUNDLING GOODS" (Attorney Docket No. I01.56, and Client Docket No. YOR920010414US1).

#### FIELD OF THE INVENTION

**[0008]** The present invention generally relates to commerce systems and methods. More particularly, embodiments of the present invention relate to systems and methods for conducting sales of goods and services.

#### BACKGROUND OF THE INVENTION

**[0009]** Auctions have proliferated with the advent of the Internet and advances in communication. Many businesses use auctions and marketplaces to buy and sell goods and services and often enjoy great savings and efficiencies as a result. The essential premise of an auction is that prices are determined as a result of competition between bidders for items offered for sale or purchase. These benefits, however, are only realized when more than one bidder is competing for the same item.

**[0010]** A number of different auction styles and types have developed over the years to encourage different types of competitions among bidders, including, for example: English auctions, Dutch auctions, Japanese auctions, sealed-bid auctions, double auctions, multiple-unit auction, time interval auctions, call auctions, first price auctions, uniform second price auctions, bundle auctions, and multi-attribute auctions.

**[0011]** Many of these types of auctions may be conducted as either one or two-sided auctions. One-sided auctions allow only bids or asks (but not both). One-sided auctions may be run as open or sealed-bid auctions, and as forward or reverse auctions. Two-sided (or double) auctions allow both bids and asks to take place at the same time. The term auction as defined herein shall also include exchanges, which are electronic or online marketplaces that facilitate a many-to-many trading relationship among or between buyers and sellers. Exchanges are commonly referred to by a number of names, including a trading hub, a vortex, an online marketplace, butterfly market, a bid-ask, an e-marketplace, an e-market,

an e-hub, a net market maker, [an eMarket] a vertical marketplace, or horizontal marketplace. The term auction as defined herein shall also include bulletin boards and other online commerce platforms that facilitate or enable one-to-many or many-to-many trading relationships among or between buyers and sellers. These various types of auctions and marketplaces are generally known in the art.

**[0012]** One type of two-sided auction is the “continuous double auction” where many individual transactions are carried on simultaneously and where trading does not stop when a match occurs. Examples of such auctions are financial or securities exchanges such as intra-day trading on the New York Stock Exchange. Another type of two-sided auction is a call auction, where bids and offers are aggregated, then periodically cleared. Examples of such auctions are the opens at the New York Stock Exchange and periodic calls on the Paris Bourse.

**[0013]** Some auctions and marketplaces are completely automated. In other cases, non-automated entities facilitate, support or otherwise enable marketplace transactions, potentially providing a number of benefits, including increasing market liquidity, and ensuring orderly price movements. For example, “specialists” serve this role on the New York Stock Exchange, and market-makers serve this role on the NASDAQ. As defined herein, auctions include both purely automated marketplaces, and marketplaces in which non-automated entities facilitate, support or otherwise enable marketplace transactions.

**[0014]** A common feature of most of these auctions and marketplaces is that they are generally used to sell or acquire relatively homogeneous goods or services. Without standardization of the goods or services, it is difficult to generate sufficient competition among bidders to achieve the benefits that auctions provide. As a result, auctions are typically not suited for many types of non-standardized goods or services.

**[0015]** Further, auctions are typically not suited for many types of business-to-business environments. Many business-to-business transactions rely on existing relationships between the buyer and the seller. For example, sellers often provide strategic partner discounts to

buyers with whom they have a long-standing relationship. Strategic customers expect, and often receive, volume discounts, preferred credit terms, and higher service levels than other customers. Channel partners expect to pay lower prices than their customers. Most existing auctions do not encourage or permit this type of differentiation between participants. Most existing auctions treat all participants as equals. Buyers who purchase in volume pay the same price as buyers who purchase in smaller lots. In fact, buyers who purchase in volume may sometimes pay more than buyers who purchase in smaller lots, since purchases by large buyers may have an impact on the market price of the good or service being transacted, since the size of these purchases results in an imbalance between supply and demand in the market, and may be viewed as a signal regarding future price movements.

**[0016]** Typically, existing auctions treat the bids of strategic, or long-standing customers or suppliers the same as bids from brand new customers or suppliers. It would be desirable to provide an auction and exchange system and method that allows participants to be treated differently, while still allowing these different participants to take part in the same auction.

**[0017]** Existing auctions are also not well-suited to the sale of differentiated or mass-customized products. Such products are often bundled with value-added services or contain a variety of special features and configurations. Items offered for sale or purchase using existing auctions are not typically customizable. Bidders all bid on the same configuration. As a result, because of their specialized nature, items sold at existing auctions may not attract enough interested bidders to generate active bidding. Many buyers and sellers in existing auctions attempt to minimize this problem by compromising and offering standard product configurations. These standard configurations lack differentiation and often sell at lower, commodity prices. Low commodity pricing can lead to price erosion in other channels and for other products, as customers and channel partners in other sales channels begin demanding comparable pricing.

**[0018]** A number of auction mechanisms have attempted to address some of these shortcomings. Multi-attribute auctions and exchanges allow bidders to negotiate over the attributes of an item, as well as its price, thus seeking to address the issue of auctioning differentiated goods and services. However, determining the winner of a multi-attribute auction often requires complex analysis, and is not readily transparent to market participants. This makes it difficult for auction participants to understand the bidding process, and may raise concerns about whether the auction is matching bids and offers in an equitable fashion. In addition, multi-attribute auctions often require bidders to specify the relative value they place on different attributes. In many cases, bidders may not know clearly the relative value they place on different attributes, or may have difficulty specifying it. This also creates difficulties for another reason. In many cases it may not be in the bidders' interest to be completely forthcoming about this information, and thus they may withhold or misrepresent this information. Unfortunately, these misrepresentations can distort the auction results.

**[0019]** Combinatorial auctions and combinatorial exchanges allow bidders to negotiate for bundles of items. Typically, bidders specify the relative importance they place on different bundles of items, and the auction performs an optimization to match bids and offers in a fashion that maximizes the benefit to market participants. Unfortunately, combinatorial auctions and exchanges may suffer from similar drawbacks as multi-attribute auctions. They are complex, making it difficult for auction participants to understand and interpret the bidding process and auction results. In addition, they may require bidders to reveal information that they consider private, and may thus be subject to misrepresentations by auction participants.

**[0020]** It would be desirable to provide a system and method that facilitates customization and product differentiation in auction environments, without introducing the complexities, information distortion, and uncertainties of multi-attribute and combinatorial auctions and exchanges. Preferably, the system and method would permit different

participants to competitively bid on customizable products and services in a manner that is flexible, yet straightforward. Further, it would be desirable to provide a system and method that allows participants to competitively bid on equitable terms, despite different treatment for different participants.

## SUMMARY OF THE INVENTION

**[0021]** Embodiments of the present invention provide a system, method, apparatus, and computer program code for personalized dynamic pricing in an auction involving a plurality of participants. A bid for an item is identified. A transformation function associated with the bid is then identified and applied to the bid to produce a transformed bid.

**[0022]** According to one embodiment, a state of the auction is updated based on the transformed bid. Status data representing the state of the auction may then be generated and presented to one or more participants in the auction. In some embodiments, further transformations may be applied to the status data to transform the status data before presentation to one or more participants. The result is a system and method which allows participants in an auction to compete for various items even if one or more participants are competing from a different perspective. For example, in one embodiment the transformation function applied to data is a transformation of a bid amount or a bid quantity. In other embodiments, the transformation function applied to data is a transformation related to a configuration of a product or service offered in the auction.

**[0023]** According to one embodiment of the present invention, a registration system and method is provided in which a participant registers to participate. During the registration process, at least a first transformation function is established for the participant. The transformation function may be established based on different information about the participant, the goods or services, the exchange, or others in the exchange. Transformation functions may also be established and

associated with participants or bids at various stages of the auction process.

**[0024]** According to one embodiment of the present invention, a system, method, apparatus, and computer program code for establishing customized financing terms includes identifying a bid for an item, identifying a financing function associated with a participant, and applying the financing function to the bid to generate a transformed bid reflecting customized financing terms.

**[0025]** According to one embodiment, the financing function includes at least a first parameter identifying a type of financing instrument, such as a lease or a loan. According to one embodiment, the financing function includes at least a first financing term. In some embodiments, the at least first financing term may identify at least one of: the frequency of payments of the financing instruments; the number of payments associated with the financing instrument; the timing of payments associated with the financing instrument (e.g. whether payments occur at the beginning of the period, the end of the period, or at some point in between); a duration of the financing instrument; an interest rate of the financing instrument; a collateral requirement, a penalty structure for late payments, and a down payment required for the financing instrument.

**[0026]** According to one embodiment, identifying a financing function further includes receiving a request to establish a financing function from the participant, identifying a type of the financing function, identifying at least a first term of the financing function, and associating the financing function with the participant. According to another embodiment, identifying a financing function includes searching through a plurality of pre-established financing functions. According to another embodiment, identifying a financing function includes interacting with a provider of loans or leases to identify potential loan or lease terms, and associating the financing function with the participant.

**[0027]** According to one embodiment, a system, method, apparatus, and computer program code for conducting an auction includes first receiving a bid, then identifying an item and an auction based at least in

part on the bid. At least a first customized financing term associated with said bid is identified and a status of the auction is updated to reflect the bid and the at least first customized financing term. A determination is made if the bid is a winning bid of the auction, and the auction is settled based on the at least first customized financing term. In some embodiments, the determination is made by comparing two bids having different customized financing terms to determine which bid is the winning bid of the auction.

**[0028]** According to some embodiments, a system, method, apparatus and computer program code for conducting an auction includes identifying a bid for a first item in a first auction. A bid for a second item in a second auction is also identified. A common characteristic of the first and second items is identified and an auction is conducted based on the common characteristic.

**[0029]** According to some embodiments, a system, method, apparatus and computer program code for operating a secondary auction includes receiving a request for an item from a participant. A primary auction for the item is identified. Auction information is received from the primary auction and is presented to the participant. A bid for the item is received from the participant. At least a first transformation function is identified and applied to the bid to generate a transformed bid. The transformed bid is submitted to the primary auction.

**[0030]** According to some embodiments, a system, method, apparatus and computer program code for operating a primary auction for an item includes receiving, from a secondary auction, a bid for the item, the bid having been transformed by at least one transformation function associated with an entity submitting the bid. A state of the primary auction is updated based on the received bid.

**[0031]** According to some embodiments, a system, method, apparatus and computer program code for participating in an auction involving a plurality of buyers and at least one seller of an item includes registering to participate as a buyer in the auction, providing information about at least one characteristic, and establishing at least a first transformation function for use in the auction based at least in part on the characteristic.

**[0032]** According to some embodiments, a system, method, apparatus and computer program code for composing a plurality of auctions includes identifying a first bid from a first auction, the first bid transformed by at least a first transformation function, identifying a second bid from a second auction which has been transformed by at least a second transformation function, and comparing the first and second bids to identify a best bid.

**[0033]** According to some embodiments of the present invention, a system, method, apparatus, and computer program code for facilitating the sale of an item in an auction involving a plurality of participants includes identifying a bid for the item, the bid made by one of the participants. A desired configuration associated with the bid is then identified. The bid is modified to reflect the desired configuration. A status of the auction is updated based on the modified bid.

**[0034]** According to some embodiments of the present invention, an auction status request is received, and a second desired configuration of the item is identified based at least in part on the auction status request. The second desired configuration is applied to the status to produce a transformed status.

**[0035]** According to some embodiments, the bid is modified by calculating a price differential between the desired configuration and a standard configuration of the item. In some embodiments, the price differential is determined by reference to pricing tables; in other embodiments, the price differential may be determined based on extrinsic pricing data.

**[0036]** Embodiments of the present invention also include a system, method, apparatus, and computer program code for participating in an auction, where the participation includes indicating a preferred configuration of an item offered in the auction, and viewing a status of the auction, where the status is modified based on said preferred configuration. A bid on the item is submitted which is modified based on the preferred configuration.

**[0037]** With these and other advantages and features of the invention that will become hereinafter apparent, the nature of the invention may be

more clearly understood by reference to the following detailed description of the invention, the appended claims and to the several drawings attached herein.

#### BRIEF DESCRIPTION OF THE DRAWINGS

- [0038] FIG. 1 is a block diagram of a system pursuant to embodiments of the present invention;
- [0039] FIG. 2 is a diagram depicting a bid and status process of the system of FIG. 1 according to one embodiment of the invention;
- [0040] FIG. 3 is a block diagram of one embodiment of the auction administrator device of FIG. 1;
- [0041] FIG. 4 is a tabular representation of a portion of a participant database according to an embodiment of the present invention;
- [0042] FIG. 5 is a tabular representation of a portion of an auction database according to an embodiment of the present invention;
- [0043] FIG. 6 is a tabular representation of a portion of a transformation function database according to an embodiment of the present invention;
- [0044] FIG. 7 is a tabular representation of a portion of a bid database according to an embodiment of the present invention;
- [0045] FIG. 8 is a flow diagram depicting a transformation binding process according to one embodiment of the present invention;
- [0046] FIG. 9 is a flow diagram depicting a bid process according to one embodiment of the present invention; [and]
- [0047] FIG. 10 is a flow diagram depicting a transaction process according to one embodiment of the invention;
- [0048] FIG. 11 is a flow diagram depicting a sell-side auction process according to one embodiment of the invention;
- [0049] FIG. 12 is a flow diagram depicting a buy-side auction process according to one embodiment of the invention;
- [0050] FIG. 13 is a flow diagram depicting a two-sided auction process according to one embodiment of the invention;

- [0051] FIG. 14 is a tabular representation of a financing function database according to an embodiment of the invention;
- [0052] FIG. 15 is a financing function binding process according to one embodiment of the invention;
- [0053] FIG. 16 is a transaction process according to one embodiment of the invention;
- [0054] FIG. 17 is a block diagram of a system pursuant to one embodiment of the invention;
- [0055] FIG. 18 is a tabular representation of a participant database according to one embodiment of the invention;
- [0056] FIG. 19 is a tabular representation of an auction database pursuant to one embodiment of the invention;
- [0057] FIG. 20 is a tabular representation of a financing function database pursuant to one embodiment of the invention;
- [0058] FIG. 21 is a tabular representation of a bid database pursuant to one embodiment of the invention;
- [0059] FIG. 22 is a transaction process pursuant to one embodiment of the invention;
- [0060] FIG. 23 is a tabular representation of a participant database pursuant to one embodiment of the invention;
- [0061] FIG. 24 is a tabular representation of an auction database pursuant to one embodiment of the invention;
- [0062] FIG. 25 is a tabular representation of a configuration function database pursuant to one embodiment of the invention; and
- [0063] FIG. 26 is a tabular representation of a bid database pursuant to one embodiment of the invention.

#### DETAILED DESCRIPTION

[0064] Applicants have recognized that there is a need for a system, method, apparatus, and computer program code for establishing personalized dynamic pricing for auctions or exchanges that involve competitive bidding for items. In particular, Applicants have recognized

that the use of one or more transformation functions to transform bids and auction status to personalize the auction experience for multiple differently-situated participants will facilitate competitive bidding among or between these participants, resulting in overall reduced prices for buyers, and increased demand for sellers.

**[0065]** A number of terms are used herein to describe features of embodiments of the present invention. As used herein, the term "auction" will be used to refer to any of a number of formats (known and to be developed) for selling goods or services in a competitive bidding environment. As used herein, the term "auction" may be used to refer to the set of activities that take place to solicit, receive, analyze, and respond to bids for a particular item or items. A number of different auctions may take place at any given time. Each auction involves the interaction of several entities, including at least one buyer, at least one seller, and an auction administrator. In some embodiments, one or more service providers may be involved in an auction, acting on behalf of one or more buyers, sellers, and/or administrators.

**[0066]** As will be described, embodiments of the present invention may be used with a number of different types of auctions, including, for example, those auctions referred to as: English auctions, Dutch auctions, Japanese auctions, sealed-bid auctions, double auctions, multiple-unit auctions, time interval auctions, call auctions, first price auctions, uniform second price auctions, bundle auctions, combinatorial auctions, and multi-attribute auctions. Embodiments of the present invention may also be used with other types of exchanges and marketplaces known in the art.

**[0067]** As used herein, the term "bid" (or the term "submission") will be used to refer to an offer to purchase or an offer to sell (depending on the type of auction in which the bid is made) received from an auction participant. For the purposes of this disclosure, the term "bidder" will be used to refer to the party submitting a bid. A buyer or a seller (both of which are defined further below) may be a bidder, depending on the type of auction. A bid may include one or more terms of the bid, such as a price term, a quantity term, a configuration term, a delivery term, or the

like. The bid may involve an actual purchase or transfer, a contingent purchase or transfer, the purchase or transfer of certain rights, and other types of commercial and non-commercial transactions known in the art.

**[0068]** As used herein, the term "buyer" may be used to refer to a party submitting a bid (an offer to purchase) on an item in an auction. For example, the buyer may be a prospective buyer, submitting an offer to purchase or acquire an item offered in an auction. For the purposes of this disclosure, the term "buyer" refers to prospective buyers as well as the actual purchasers of item(s) by auction. A buyer could also be a human agent representing a prospective buyer, or an intelligent software agent such as a shopping "bot" representing a prospective buyer.

**[0069]** As used herein, the term "seller" may be used to refer to the party offering to sell or provide an item in an auction. For example, the seller may be a prospective seller, submitting a bid (an offer to sell or distribute) on an item offered in an auction. For the purposes of this disclosure, the term "seller" refers to prospective sellers as well as the actual seller of item(s) by auction. A seller could also be a human agent representing a prospective seller, or an intelligent software agent such as a shopping "bot" representing a prospective seller. Both "buyers" and "sellers" will be referred to as "participants" in the auction.

**[0070]** As used herein, the phrase "winning bid" will be used to refer to the bid (either an offer to purchase, an offer to sell, or either an offer to sell or an offer to purchase, depending on the type of auction) which, at the close of the auction, results in the winning participant acquiring the right (or obligation) to purchase or sell the item offered in the auction.

Depending on the type of auction, the "winning bid" may not necessarily be the highest priced bid (e.g., in a Dutch auction, the winning bid may be at a lower price than earlier bids). Depending on the type of the auction, there may be multiple "winning bids". As used herein, the phrase "current best bid" will be used to refer to any bid which, during the conduct of the auction, would be the "winning bid" if the auction were to close without consideration of further bids.

**[0071]** As used herein, the term “administrator” will be used to refer to an entity operating as the coordinator, organizer or facilitator of an auction or exchange. The administrator may be an independent entity operating a commercial auction or exchange, or the administrator may be operating on behalf of a seller or buyer to conduct a closed or private auction with a limited number of participants. The administrator may also be operating on behalf of a seller or buyer to conduct a public auction with a broad range of participants. In embodiments described herein, the administrator will be described as the entity controlling the resources used to solicit information (e.g., bids, auction status data, and transformation data). In some embodiments, the administrator may be an independent entity. In other embodiments, the administrator may be an affiliate of one or more participants in the auction, and/or an affiliate of one or more service providers. In other embodiments, the administrator may be a participant in the auction, or a service provider, or an entity partially or entirely owned or controlled by one or more participants in the auction, or by one or more service providers.

**[0072]** As used herein, the term “service provider” will be used to refer to an entity that provides value-added services such as logistics support, fulfillment, financing, or transaction settlement services that facilitate conducting transactions in an auction or exchange. The service provider may be an independent entity providing services, an entity operating on behalf of an auction administrator, or an entity operating on behalf of a participant (e.g., a buyer or seller) in an auction. In some embodiments, the service provider may be an entity controlling resources used to solicit information (e.g., information used to develop transformation functions or other information used in conjunction with embodiments of the present invention).

**[0073]** In particular, service providers could include providers of credit, providers of credit insurance, providers of credit enhancement, providers of credit scores, providers of credit information, providers of market information about interest rates, providers of information about the credit-worthiness of participants in a financing arrangement, brokers, providers of

insurance for assets that are used to secure financing arrangements,  
appraisers of assets that are used to secure financing arrangements,  
providers of information about expected residual values of assets that are  
included in financing arrangements, providers of market values of assets  
that are included in financing arrangements, providers of information about  
competitive financing terms being offered in the marketplace, providers of  
derivative securities, application service providers, providers of credit  
settlement services, providers of payment settlement services, providers of  
trade financing, providers of import-export financing, and banks and other  
financial services institutions and organizations.

**[0074]** As used herein, the term “item” may be used to refer to any of a number of different types of goods or services that may be purchased or sold in an auction or exchange format. As an illustrative example, items that may be purchased or sold using techniques of the present invention may include: differentiated goods, commodities, factor inputs, components, systems, subsystems, devices, raw materials, manufactured products, services, options to purchase goods or services, financial instruments, claims on assets, contingent claims on assets, or the like. An “item” may be an individual component, device or service. An “item” may also be a grouping of individual components, devices or services (sometimes referred to herein and in the art as a “lot” or as a “bundle”). An “item” may also be an assemblage of components and/or services into a system (sometimes referred to herein and in the art as a “configuration”).

**[0075]** As used herein, the term “financing instrument” may be used to refer to any of a number of contracts or other instruments used to fund or finance a purchase, lease or other use of one or more items acquired via an auction operated pursuant to embodiments of the present invention. A financing instrument may be a loan, mortgage or other contract to purchase, or a lease or other contract to rent or lease one or more items acquired via an auction operated pursuant to embodiments of the present invention.

**[0076]** Each of these different types of financing instruments may include one or more “financing terms” such as: a financing price; fees or

other charges associated with the financing instrument (e.g. origination fees, maintenance fees, prepayment fees, late fees, etc.); a term or duration of the financing instrument; a residual value; a fixed interest rate associated with a financing instrument; a benchmark rate associated with a floating rate financing instrument; spreads with reference to a benchmark rate associated with a floating rate financing instrument; options such as interest rate derivatives such as caps and floors that affect the cash flows of the financing instrument; specifications of options to extend or to terminate the financing instrument; a residual or terminal value of said financing instrument; an option to buy an item being financed; an option to sell an item being financed; terms and conditions associated with the state of the item being financed (e.g. penalties for excess usage, or requirements that an item serving as collateral for a loan be maintained in a certain condition); terms and conditions associated with the use of the item (e.g. requirements that certain types of insurance be maintained during the course of a lease or loan; requirements that an asset be used in a certain manner or for a certain purpose, requirements that certain types of maintenance be performed; or requirements that an item not be operated in a certain manner); terms and conditions associated with one or more parties to the financing arrangements (such as debt covenants limiting issuance of other debt or requirements that a lessor maintain a certain level of capitalization); terms and conditions regarding penalties associated with payment delays for said financing instrument; terms and conditions regarding liabilities or indemnifications for said financing instrument; terms and conditions regarding resolution of legal disputes for said financing instrument; terms and conditions regarding repossession or foreclosure for said financing instrument; terms defining if the financing instrument is secured; terms defining how the financing instrument is secured; terms defining how costs shall be shared or borne by parties to the transaction; terms defining how returns, revenues, profits or other cash flows shall be shared or borne by parties to the transaction; or other financing terms known in the art that are used to particularly identify and establish a financing relationship between parties.

## SYSTEM

**[0077]** Referring first to FIG. 1, an auction system 10 according to embodiments of the present invention is shown. As shown in FIG. 1, auction system 10 includes a number of participants operating participant devices 12. The participants may include one or more individuals or entities acting as buyers in an auction (and operating buyer devices 12a-i) and who submit offers to purchase items posted for sale or purchase in the auction. The participants also include one or more individuals or entities acting as sellers in an auction (and operating seller devices 12n-z) and who submit offers to sell items in an auction. One or more auction administrators operating auction administrator devices 16a-n may be employed to administer auctions employing features of the present invention. One or more auction service providers operating auction service provider devices 24a-n may be employed to provide value-added services supporting an auction conducted in auction system 10.

**[0078]** Each of these parties may communicate and participate in auctions pursuant to the invention via a communication network 18. Each of the parties, in one embodiment, operates computing devices in communication with communication network 18. These devices will be described further below. For the purpose of describing features of the invention, the party (e.g., the auction administrator) and the device operated by that party (e.g., an auction administrator computing device) may be referred to as either the party or the device (e.g., "participant 12" may also be referred to as "participant device 12").

**[0079]** In one embodiment of the present invention, an auction utilizing features of the present invention involves one auction administrator operating auction administrator device 16 which is configured as a Web-based server device accessible to participants 12a-z (including participants acting as buyers as well as participants acting as sellers) via the Internet. As will be described further below, the auction operated by the auction administrator via auction administrator device 16 may be any

of a number of different types. Participation by buyers and sellers will vary based on the type of auction. For example, in a sell-side auction, a plurality of buyers operating buyer devices 12a-i will interact with an auction administrator operating auction administrator device 16 to submit offers to purchase items posted by one or more sellers operating seller devices 12n-z. In a buy-side auction, a plurality of seller devices 12n-z will interact with auction administrator device 16 to present offers to sell items requested by one or more buyers via buyer devices 12a-i. Other auction or exchange types will involve other forms of interaction known in the art.

**[0080]** Pursuant to one embodiment of the present invention, one or more participants may be associated with one or more transformation functions 20. As will be described further below, these transformation functions 20 are used to modify, adapt, translate or otherwise transform information used in an auction. As an example, a participant such as Participant A (Buyer 12a in FIG. 1) may have an associated transformation function 20a which transforms some or all of the bids submitted by Participant A. For example, transformation function 20a may be a discount that is automatically applied to all bids submitted by Participant A in a certain auction. Other participants may have different transformation functions associated with them. For example, Participant B (Buyer 12b in FIG. 1), acting as a buyer in the same auction as Participant A may be associated with a transformation function 20b that automatically applies a current currency exchange rate to transform Participant B's preferred bid currency to the currency of the auction.

**[0081]** Transformation functions 20 may also be used to modify, adapt, translate or otherwise transform information that is transmitted from auction administrator device 16 to one or more participant devices 12. For example, Participant D may view the status of an auction after the status has been transformed by a transformation function associated with Participant D. Other types and uses of transformation functions 20 pursuant to the present invention will be discussed further below.

**[0082]** Each of the parties operating devices 12, 16 or 24 may communicate via communication network 18, which may be any of a

number of different types of commonly-used networks, such as a Local Area Network (LAN), a Metropolitan Area Network (MAN), a Wide Area Network (WAN), a proprietary network, a Public Switched Telephone Network (PSTN), a Wireless Application Protocol (WAP) network, a wireless network, a cable television network, or an Internet Protocol (IP) network such as the Internet, an intranet or an extranet. Moreover, as used herein, communications include those enabled by wired or wireless technology.

**[0083]** Although some embodiments of the present invention are described with respect to information exchanged using a Web site, according to other embodiments information can instead be exchanged, for example, via: a telephone, an Interactive Voice Response Unit (IVRU), electronic mail, a WEBTV® interface, a cable network interface, and/or a wireless communication system.

**[0084]** Participant devices 12a-z, auction administrator devices 16a-n and auction service provider devices 24a-n may be any devices capable of performing the various functions described herein. In one embodiment, auction administrator devices 16a-n and auction service provider devices 24a-n are configured as Web-based server devices, and participant devices 12a-z are configured as general purpose computing devices. In general, participant devices 12, auction administrator devices 16 and auction service provider devices 24 may be computing devices such as: a Personal Computer (PC), a portable computing device such as a Personal Digital Assistant (PDA), a wired or wireless telephone, a one-way or two-way pager, a kiosk, an interactive television device, or any other appropriate storage and/or communication device.

**[0085]** Referring now to FIG. 2, a bid and status process 50 pursuant to embodiments of the present invention is shown. Process 50 will be described to illustrate certain features of embodiments of the present invention. Further details of embodiments of the present invention will be provided below. Process 50 involves interaction between a number of different participants in an auction, referred to here as Participant A, Participant B, and Participant C. In the depicted process, Participant A is

participating as a buyer in an auction and submits a bid (in this example, the bid is an offer to purchase) on an item. This bid may be, for example, submitted to an auction administrator (not shown) running the auction. The bid is transformed by a transformation function 20a. In one embodiment, transformation function 20a is applied by software residing at the participant device 12a operated by Participant A. In another embodiment, it may be applied by software residing at auction administrator device 16. In another embodiment, transformation function 20a may be applied by software residing at an auction service provider device (e.g., item 24 of FIG. 1). In yet other embodiments, the function may be applied by software residing at an seller device (e.g., item 12n-z of FIG. 1). Other techniques for enforcing and applying transformation functions may also be used.

**[0086]** As an example of a transformation function which may be utilized in an auction pursuant to the present invention, Participant A is a preferred customer of the seller offering items in the auction, and has been granted a preferred customer credit for its interactions with a particular seller (e.g., a 10% bidding credit on items offered for sale by the seller). According to embodiments of the present invention, transformation function 20a is used to apply this preferred customer credit to Participant A's bid, resulting in the submission to the auction of a 10% increased bid. Thus, if the current best bid in the auction is \$10,000, Participant A could make a \$10,000 bid, which, after the preferred customer transformation function is applied, will result in submission of a transformed bid of \$11,000 in the auction. If the auction is a typical forward English auction, subsequent buyers will need to submit a bid higher than Participant A's transformed bid of \$11,000 if they wish to remain in the bidding for the item.

**[0087]** According to embodiments of the present invention, transformation function 20 may be any of a number of different types and combinations of functions. For example, transformation function 20a may be a function that modifies a price of an offer to purchase made by Participant A. Transformation function 20a may also be a function that

modifies a quantity or description of the item offered to be purchased or sold. Other types and combinations of transformation functions which may be utilized in embodiments of the present invention will be described further below.

**[0088]** As depicted in FIG. 2, application of transformation function 20a results in submission of a transformed bid to the auction. That is, the current status of the auction reflects the submission of a transformed bid (transformed by transformation function 20a). In the example where Participant A receives a 10% preferred customer bidding credit, Participant A can make a \$10,000 bid which has the effect of an \$11,000 bid. The current status of the auction, as viewed by certain other participants in the auction, will show that the current best bid is an offer to purchase for \$11,000, provided that no transformation function is applied to the status information provided to these participants. In a standard English auction, such other buyers in the auction will need to submit an offer to purchase greater than \$11,000 to stay in the auction.

**[0089]** In most auctions, one or more participants need to be made aware of the status of the auction. For example, other buyers need to know the status of the auction in order to decide whether to continue to participate and submit further bids. According to one embodiment of the present invention, other participants (here, Participants B and C) may view the status of the auction based on further transformations. For example, in the illustrative example where Participant A received a 10% credit on his \$10,000 bid, the current bid status shows an offer to purchase of \$11,000. Participant B may be entitled to a preferred customer discount of 5%. This discount may be applied as transformation function 20b, resulting in a transformed status being displayed to Participant B (e.g., in the example, Participant B will see that the offer to purchase amount to beat is 5% less than \$11,000, or \$10,450). Participant C, on the other hand, may be bidding using British Pounds, rather than American Dollars. Transformation function 20c may be applied to transform the \$11,000 status into an amount reflecting the current status in British Pounds. This transformation may be based on data extrinsic to the auction (e.g., the

transformation may require consultation of a source of foreign exchange rate information).

**[0090]** The result is a system that allows multiple participants having different standing to participate in the same auction or exchange. Each participant's special status or standing is automatically applied to their bids and to their viewing of the status of the auction. Further details and benefits of embodiments of the present invention will be described below. A description of one embodiment of an auction administrator device will first be described, along with a discussion of data stored at or accessible to the device pursuant to embodiments of the present invention.

## DEVICES

**[0091]** FIG. 3 illustrates an embodiment of an auction administrator device 100 which may be operated by an auction administrator in the system of FIG. 1. Auction administrator device 100 may be used in embodiments where an auction administrator is used to administer and conduct an auction pursuant to the invention. In other embodiments, a buyer, a seller, an auction service provider or other entity may participate in the administration of the auction.

**[0092]** Administrator device 100 may be implemented as a system controller, a dedicated hardware circuit, an appropriately programmed general purpose computer, or any other equivalent electronic, mechanical or electro-mechanical device. Administrator device 100 comprises a processor 110, which may be any of a number of suitable processing devices, such as one or more Intel® Pentium® processors. Processor 110 is coupled to a communication device 120 through which processor 110 communicates with other devices, such as, for example, one or more participant devices 12 operated by buyers and/or sellers participating in the auction, and auction service provider devices 24 operated by auction service providers providing value-added services in support of an auction (each of which devices may also be implemented as general purpose

computer or other equivalent electronic, mechanical, or electro-mechanical device).

**[0093]** Communication device 120 may include hardware and software to facilitate communication with other devices using wired or wireless techniques, or a combination of different techniques. For example, communication device 120 may be one or more of: a network adapter, a modem, a Bluetooth device, etc. In one embodiment, communication device 120 facilitates communication with other devices over a network such as the Internet. Processor 110 may also be in communication with one or more input and output devices (not shown) as are known in the art (such as, for example, a keyboard, mouse, microphone, monitor, printer, etc.).

**[0094]** Processor 110 is also in communication with a data storage device 130. Data storage device 130 comprises an appropriate combination of magnetic, optical and/or semiconductor memory, and may include, for example, Random Access Memory (RAM), Read-Only Memory (ROM), a compact disc and/or a hard disk. Processor 110 and data storage device 130 may each be, for example: (i) located entirely within a single computer or other computing device; or (ii) connected to each other by a remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver. In one embodiment, administrator device 100 may comprise one or more computers that are connected to a remote server computer for maintaining databases.

**[0095]** Data storage device 130 stores a program 115 for controlling processor 110. Processor 110 performs instructions of program 115, and thereby operates in accordance with the present invention, and particularly in accordance with the methods described in detail herein. Program 115 may be stored in a compressed, uncompiled and/or encrypted format. Program 115 furthermore includes program elements that may be necessary for allowing processor 110 to interface with computer peripheral devices, such as an operating system, a database management system and "device drivers". Appropriate program elements are known to those skilled in the art, and need not be described in detail herein.

**[0096]** According to an embodiment of the present invention, the instructions of program 115 may be read into a main memory from another computer-readable medium, such as from a ROM to RAM. Execution of sequences of the instructions in program 115 causes processor 110 to perform the process steps described herein. In alternative embodiments, hard-wired circuitry may be used in place of, or in combination with, software instructions for implementation of the processes of the present invention. Thus, embodiments of the present invention are not limited to any specific combination of hardware and software.

**[0097]** Data storage device 130 also stores (i) a participant database 200, (ii) an auction database 300, (iii) a transformation function database 400, and (iv) a bid database 500. These databases are described in detail below and depicted with exemplary entries in the accompanying figures.

## DATABASES

**[0098]** Each of the databases referred to in FIG. 3 will now be described by referring to FIGs. 4-7. While the databases are shown as being stored at, or accessible by, administrator device 100, portions of or all of the data in one or more of the databases may be stored at or accessible to other devices in the system. For example, in some embodiments, transformation functions may be stored at (or accessible to) devices operated by other participants in an auction, such as devices operated by buyers, sellers, or service providers.

**[0099]** As will be understood by those skilled in the art, the schematic illustrations and accompanying descriptions of the databases presented herein are exemplary arrangements for stored representations of information. A number of other arrangements may be employed besides those suggested by the tables shown. Similarly, the illustrated entries of the databases represent exemplary information only; those skilled in the art will understand that the number and content of the entries can be different from those illustrated herein.

## PARTICIPANT DATABASE

**[0100]** Referring to FIG. 4, a table is shown representing a participant database 200 that may be stored at, or accessible by, auction administrator device 100 according to an embodiment of the present invention. The table includes entries identifying a number of different entities and/or individuals that have been identified as participating in an auction pursuant to the present invention. Participants identified in participant database 200 may include parties acting as buyers in an auction as well as parties acting as sellers in an auction. This information may be stored in database 200 when a participant registers for participation in one or more auctions.

**[0101]** The table shown in FIG. 4 defines a number of fields 202-208 for each of the entries. In the embodiment depicted, the fields specify: a participant identifier 202, a name 204, contact information 206, and transformation rule(s) 208. Other fields and combinations of fields may also be used to provide and access information about different participants in an auction and their associated transformation functions.

**[0102]** Participant identifier 202 may be, for example, an alphanumeric code or other information that is associated with and used to identify a participant who has registered to participate in one or more auctions pursuant to embodiments of the present invention. Participant identifier 202 may be generated by, for example, auction administrator device 100 (FIG. 3) or it may be provided by a participant. The participant's individual or company name may be provided in name 204, while information used to contact the participant may be provided in contact information 206.

**[0103]** Transformation rule(s) 208 may be, for example, information identifying circumstances in which one or more transformation functions associated with the participant may be applied. Individual transformation functions may be identified by reference to one or more function identifiers (defined in transformation function database 400 described below in conjunction with FIG. 6). Any of a number of different transformation functions may be referenced. Further, any of a number of different rules

for applying the transformation functions for a particular participant may also be provided.

**[0104]** For example, in some embodiments, the application of a particular transformation function will depend on the identity of the seller (e.g., the party offering to sell items via auction). In some embodiments, the seller may offer discounts, rebates, or other preferential status to all buyers bidding on its offerings. This preferential status may be identified and applied via rules contained in transformation rule(s) 208.

**[0105]** As another example, in some embodiments, the application of a particular transformation function will depend on the identity of both the seller (e.g., the party offering to sell items via auction) and the buyer (e.g., the party offering to buy items via auction). For example, in some embodiments, the seller may offer discounts, rebates, or other preferential status to certain buyers. This preferential status may be identified and applied via rules contained in transformation rule(s) 208.

**[0106]** As another example, in some embodiments, the application of a particular transformation function will depend on the identity of both the seller (e.g., the party offering to sell items via auction) and the nature or identity of the item posted for sale or purchase via the auction. For example, in some embodiments, the seller may offer discounts, rebates, or other preferential status only on selected items, selected sets of items, or selected classes of items. This preferential status may be identified and applied via rules contained in transformation rule(s) 208.

**[0107]** As another example, in some embodiments, the application of a particular transformation function will depend on the nature or identity of the item posted for sale or purchase via the auction. For example, in some embodiments, a buyer may wish to only bid on a certain configuration of item. A configuration-related transformation function may be identified in 208 and may be applied when the particular item is offered for sale. For example, a buyer in a sell-side auction who has a desired configuration of a laptop computer may specify this by defining an appropriate transformation function. In an auction where laptop computers are offered for sale, the buyer's bid will be transformed to specify the

desired configuration. Other examples of transformation rules will be provided below.

**[0108]** In the table depicted in FIG. 4, participant information is stored in participant database 200, which is stored at or accessible by auction administrator device 100. In other embodiments, participant information (or some portion thereof), may be stored at other locations, such as a database stored at or accessible to participant device 12 or auction service provider device 24 (FIG. 1). In such embodiments, participant information may be requested from the device that is storing or has access to the information, or it may be requested by other devices in the system.

**[0109]** In some embodiments, further participant information may be specified to precisely identify appropriate transformation functions. This information could include, for example, information specifying the nature of the participant, such as participant business, industry, demographic, and psychographic information. Other information may also be provided, such as information identifying participant purchasing behaviors, including: historical bidding information, click stream and other response information from other Web-sites or exchanges, and purchasing behavior from other sales and distribution channels.

**[0110]** Still other information may be provided identifying participants, such as transaction histories in other sales and distributions channels, or transaction histories for sales or purchases of goods or services unrelated to items being offered in the present auction. This information may include information related to the future cost of servicing a particular participant, such as warranty and other terms typically provided to the participant in these and other transactions. Yet other information may be provided which identifies participant behavior post-transaction, such as return rates or estimates of anticipated future transactions. Other information might also include information to ascertain the participant's level of interest in a particular item, such as historical responses to sales inquiries about the item, or feedback provided by sales representatives or customer service representatives about the participant. Those skilled in the art will recognize that other information may also be provided which may allow the creation,

selection and application of appropriate transformation functions for a particular participant.

### AUCTION DATABASE

**[0111]** Referring now to FIG. 5, a table is shown representing an auction database 300 that may be stored at, or accessible to, auction administrator device 100 (FIG. 3) according to an embodiment of the present invention. The table includes a number of entries identifying one or more auctions that are operated by the auction administrator. The table also defines fields 302-308 for each of the entries. The fields specify information used to identify each of the auctions administered by the auction administrator, including for example: an auction identifier 302, a seller identifier 304, an item identifier 306, and one or more bid rule(s) 308. The information in auction database 300 may be created and updated, for example, when an auction administrator establishes an auction using features of embodiments of the present invention. This information may be entered by an auction administrator operating auction administrator device 100. In some embodiments, the information may also be entered by other parties, such as a participant operating participant device 12 or a service provider operating auction service provider device 24 (FIG. 1).

**[0112]** Auction identifier 302 may be, for example, an alphanumeric code associated with an auction administered by an auction administrator. Auction identifier 302 may be generated by, for example, auction administrator device 100.

**[0113]** Offeror identifier 304 may be, for example, the same as or related to participant identifier 202 of participant database 200. Offeror identifier 304 identifies the party in the auction identified by auction identifier 302 who is soliciting bids on an item. For example, in a sell-side auction, the offeror identifier 304 identifies a participant who has posted an item for sale via the auction identified by auction identifier 302. In a buy-side auction, on the other hand, the offeror identifier 304 identifies a

participant interested in purchasing an item or items, and is soliciting bids from prospective sellers via the auction identified by auction identifier 302.

**[0114]** In some embodiments, offeror identifier 304 may identify an offeror that does not have a participant identifier (from participant database 200). In such cases, additional information identifying the offeror may be provided, for example, in auction database 300.

**[0115]** Item identifier 306 may be, for example, information identifying one or more items for which bids are being solicited in the auction identified by auction identifier 302. The information may include, for example, a product code such as a Universal Product Code (UPC) or other information particularly identifying the item(s). In the depicted embodiment, item identifier 306 simply includes an alphanumeric designator along with a brief description of the item. In other embodiments, further details of offered items may be specified to precisely identify items offered by auction. These details could include descriptions of product or service characteristics, images depicting a product or service, information about the manufacturer or provider of a product or service, information about delivery terms associated with a product or service, links to web pages with further information about the product or services, links to web pages with further information about the manufacturer or provider of a product or service, etc.

**[0116]** Bid rule(s) 308 may include information identifying one or more rules that govern the bidding process of the auction identified by auction identifier 302. For example, bid rule(s) 308 may include rules specifying a starting bid for the item, whether the auction is a forward or a reverse auction, whether the auction is public or private, whether bidding will be anonymous or not, the type of auction (e.g., open cry, sealed-bid, Dutch, English, etc.), a minimum bid increment, a start time, an end time, a reserve price, etc. In some cases, these rules may specify other databases or database fields with further information required to process the rule. For example, if a rule specifies that an auction is a private auction, it might include a reference to another database specifying qualified participants in the private auction. Other rules necessary to

govern the conduct of the auction identified by auction identifier 302 may also be provided in bid rule(s) 308.

**[0117]** In the example data shown in FIG. 5, one seller (participant identifier P1004) is soliciting bids in three different auctions for three different items. Each of the auctions in which P1004 is soliciting bids are forward open cry auctions, with established starting bids and bid increments. Each auction also has specified starting and ending times.

#### TRANSFORMATION FUNCTION DATABASE

**[0118]** Referring to FIG. 6, a table represents a transformation function database 400 that may be stored at (or accessible to) auction administrator device 100 (FIG. 3) according to an embodiment of the present invention. The table includes a number of entries identifying different transformation functions that may be applied to information in auctions operated pursuant to embodiments of the present invention. The table also defines a number of fields 402-406 for each of the entries. The fields specify: a function identifier 402, transformation rule(s) 404, and a transformation description 406. The information in transformation function database 400 may be created and updated, for example, by an auction administrator based on information received from individual participants in an auction.

**[0119]** Function identifier 402 may be, for example, an alphanumeric code associated with a particular transformation function that may be used in an auction operated pursuant to embodiments of the present invention. A number of different function identifiers 402 may be established for use in an auction.

**[0120]** Transformation rule(s) 404 may be, for example, information identifying one or more rules that are applied when the transformation function identified by function identifier 402 is used. Transformation rule(s) 404 may include any of a number of different types of rules including rules that operate on the amount of an offer to purchase or offer to sell, rules that operate on a bid or offer quantity or configuration, or the like.

Examples of different types of transformation rule(s) 404 which may be applied using embodiments of the present invention include rules which: apply a discount; apply a rebate; factor in shipping; duties, and other logistics costs; factor in taxes; perform a currency exchange from an offer currency to an auction currency (or vice versa); establish a preferred configuration; establish a preferred quantity; establish preferred service levels; establish warranty terms; establish payment terms; establish desired ancillary services; establish required ancillary services; establish particular bundlings of goods or services; establish the utility associated with certain product or service attributes; establish a preferred shipping mode; establish a preferred shipping route; waive a fee; etc. These transformation rule(s) may be established for a particular participant (e.g., the rules may particularly define specific product bundling needs for a specific participant), or they may be generically created for multiple participants (e.g., currency conversion may always be applied in an auction to transform a buyer's local currency to the functional currency or default currency of an auction currency).

**[0121]** Transformation rule(s) 404 may be expressed in any of a number of different functional forms, including functions that operate on the amount of an offer to purchase or offer to sell, functions that operate on a bid or offer quantity or configuration, or the like. Examples of different types of functional forms for transformation rule(s) 404 which may be applied using embodiments of the present invention include functional forms such as: a fixed percentage multiplier of a bid, offer, or auction status; a percentage multiplier of a bid, offer, or auction status that varies with a quantity of said bid; a percentage multiplier of a bid, offer, or auction status that varies with a magnitude of a bid, offer, or auction status; a fixed addition to said bid price; a fixed addition to said bid price that varies with a magnitude of a bid, offer, or auction status; an amount added to the bid price that varies with a magnitude of a bid, offer, or auction status; a linear function; and a non-linear function.

**[0122]** In one embodiment of the present invention, transformation rule(s) 404 may be described in terms of a functional model, with

associated model parameters. In such embodiments, entries in transformation function database 400 may include a transformation rule 404 describing the functional form of the transformation function, accompanied by at least one parameter associated with the transformational form. For example, a simple parameterized model to represent increasing a bid by 10% could be represented by the functional form "TRANSFORMED BID = PARAMETER \* ORIGINAL BID", with an associated parameter of "1.10".

**[0123]** Transformation rule(s) 404 may include rules establishing that a discount or other transformation be performed only if certain conditions are met. For example, some transformations may only be available to participants dealing with a particular participant (e.g., a seller may grant a strategic partner discount to a particular buyer). Other transformations may only be available if the bid amount or other terms of bid meet specified criteria (e.g., a buyer may receive a discount if the offer to purchase amount is above a predetermined threshold). Those skilled in the art, upon reading this disclosure, will recognize that a number of other different types and combinations of transformation rule(s) 404 may be applied using features of the present invention.

**[0124]** Transformation description 406 may be, for example, information describing the function identified by function identifier 402. Further, information at 406 could include information to be displayed to participants of the auction during the auction.

**[0125]** As shown in FIG. 6, transformation functions pursuant to embodiments of the present invention include transformations of bids or offers (such as functions F1001-F1004) and transformations of auction status (such as functions F1005-F1006). Some transformations affect the amount (in currency or quantity, for example) of a bid, while other transformations may affect the configuration, style, quality, or other attributes of an item for which an offer is made (such as function F1007). Other transformations may affect a buyer or seller's registration status or participation terms in an auction (such as function F1008). Other transformations may affect multiple information sources and flows. For

example, some transformation functions could affect bids and offers, as well as auction status. Other transformations may also be provided as will become apparent to those skilled in the art upon reading this disclosure.

#### BID DATABASE

**[0126]** Referring now to FIG. 7, a table is shown which represents a bid database 500 that may be stored at, or accessible by, auction administrator device 100 according to an embodiment of the present invention. The table includes a number of entries identifying bids that have been received in auctions administered by an auction administrator operating auction administrator device 100. For clarity of exposition, only a few exemplary bids are illustrated in the table shown in FIG. 7. As described in the definitions set forth above, "bids" as used herein may refer to either offers to purchase or offers to sell (depending on the type of auction operated), therefore, bid database 500 may record information about offers to sell (e.g., in the case of a buy-side auction), offers to purchase (e.g., in the case of a sell-side auction), or both offers to purchase and offers to sell (e.g., in the case of a two-sided auction).

**[0127]** The table also defines a number of fields 502-512 for each of the entries. The fields specify: an auction identifier 502, a participant identifier 504, a bid 506, a transformation function 508, a transformed bid 510, and current bid information 512. The information in bid database 500 may be created and updated, for example, each time auction administrator 16 receives a bid from a participant in an auction being operated by auction administrator 16. Some or all of the information stored in bid database 500 may be received via communication network 18 in any of a number of different formats. For example, bids (and other information transmitted pursuant to the invention) may be submitted by (or to) participants 12 via electronic data interchange (EDI) messages, via Extensible Markup Language (XML) messages, via instant messaging, via electronic mail, via Web-based forms, via telephone or facsimile, telex, etc.

**[0128]** Auction identifier 502 may be, for example, based on or identical to auction identifier 302 of auction database 300, and is used to associate a particular bid with a particular auction. Each auction identified by an auction identifier 502 may have a number of entries representing individual bids received for that auction. In the table shown in FIG. 7, only the current best bid in each auction is shown. However, other bids and offers, including a previous best bid or bids, or current bids that are not the current best bid, could also be recorded in bid database 500. For example, in a continuous two-sided auction, a buyer may place a bid that at the time of the bid may not be the current best bid, but which may become the current best bid as market conditions change over time.

**[0129]** Participant identifier 504 may be, for example, based on or identical to a participant identifier 202 of participant database 200 and is used to identify a particular participant (such as a buyer or seller) in an auction. Each participant in an auction may submit multiple bids and, therefore, bid database 500 may contain multiple entries for a participant in a particular auction. In the example data depicted in FIG. 7, bid data is shown for three different participants (buyers P1002, P1003, and P1007) bidding in three different auctions (auctions A1001, A1002 and A1003).

**[0130]** Bid 506, may be, for example, information identifying a particular bid made by a participating buyer or seller. In the embodiment depicted, only information reflecting the current best bid in each auction is depicted. In some embodiments, data will also be stored indicating the bid history of the auction, including all bids received (whether or not a bid is the current best bid or not). The information in bid 506, in one embodiment, reflects non-transformed bid information. For example, referring to the first row of the table shown in FIG. 7, bid 506 made by participant P1002 is a bid to purchase one (1) lot of the item being auction in auction A1001 (reference to auction database 400 shows that item I1001 -- laptop computers -- are the items being auctioned) at a bid price of \$320/unit.

**[0131]** In some embodiments, there may be more than one current best bid or offer for each auction. For example, in some auctions, a single lot containing multiple items may be offered to multiple buyers. Bid database

500 may also be used to record former current best bids to provide a bid history or audit trail. For example, this information may be used to track the bidding history of different buyers and/or to award units being sold in the auction to a substitute buyer in the case where a current best buyer (or group of current best buyers) is unable to settle their auction trade. In some embodiments, bid database 500 may also be used to record current bids that are not the best bid.

**[0132]** Transformation function 508 may be, for example, the same as or related to one or more transformation function identifiers 402 of transformation database 400. For example, depending on the bid, the participant, and the auction, one or more transformation functions may apply. In the example data shown in FIG. 7, the bid made by participant P1002 is transformed by transformation function identifier F1001 (applying a 10% strategic partner credit). The bid made by participant P1003 in auction A1002 is transformed by the transformation function identified by identifier F1008 (waiving the auction registration fee), while the bid made by participant P1007 in auction A1003 is transformed by transformation function F1004 (converting currency from the bid currency to the auction currency in U.S. dollars). In the example date shown in FIG. 7, a single transformation function is associated with each entry. However, in some instances, there may be no transformation function associated with a bid by a participant in an auction, so there would be no entry in transformation function field 508 in bid database 500. In other cases, there may be multiple transformation functions associated with a single bid by a participant in an auction, so there would be multiple entries in transformation function field 508 in bid database 500.

**[0133]** Transformed bid 510 may be, for example, information reflecting bid 506 after application of transformation function 508. In the example data shown in FIG. 7, in the first row, the bid made by participant P1002 (of \$320/unit) has been transformed by applying the 10% strategic partner credit to arrive at a transformed bid of \$352/unit.

**[0134]** Current bid information 512, may be, for example, information identifying the current best bid in a particular auction. In a forward sell-

side auction, the current best bid is the highest offer received. The best bid in a buy-side auction may be the lowest price offered for an item. Current bid information 512, may be, for example, information identifying a current status of the auction identified by auction identifier 502. The nature and content of this information may depend on the type of auction. For example, in a typical Open cry, forward, sell-side auction, current bid information 512 may include a current high bid amount and a current high bid quantity.

**[0135]** Other information necessary or useful in identifying a current bid status may also be provided in current bid information 512 (e.g., the time of the current bid may also be provided). In one embodiment, this current bid information 512 represents the current bid status at a particular moment in time (e.g., upon receipt and processing of the current bid received by the participant identified by participant identifier 504 in the auction identified by auction identifier 502).

**[0136]** In the data shown in FIG. 7, current bid information 512 reflects the current best bid in the auction. This current bid information 512 may be provided to participants to reflect the current status of the auction (e.g., informing potential participants of the current best bid). In some embodiments, as will be described further below, current bid information 512 may be further transformed before it is communicated to certain participants.

**[0137]** Those skilled in the art will recognize that other types of data may be included in bid database 500. For example, other types of information may be required in different types of auctions. A two-sided auction may require tracking limit orders and may also require tracking the expiration date and time of the limit orders. Other types of auctions may allow submission (and thus require tracking) of bids which are contingent on the occurrence or non-occurrence of some event. Other system architectures are possible as well. For example, to improve system response times, historical bid information may be stored in a separate database.

## PROCESS

**[0138]** Processes pursuant to embodiments of the present invention will now be described by referring to FIGs. 8-10. In particular, a transformation binding process, a bid process, and a transaction process will be described. In one embodiment, the processes described in FIGs. 8-10 are conducted under the direction of computer program code stored at auction administrator device 16, participant device 12 and/or auction service provider device 24 (or any combination thereof). The particular arrangements of elements in the flow charts of FIGs. 8-10 are not meant to imply a fixed order to the steps; embodiments of the present invention can be practiced in any order that is practicable.

### TRANSFORMATION BINDING PROCESS

**[0139]** Referring now to FIG. 8, a transformation binding process 600 pursuant to one embodiment of the present invention is shown. Transformation binding process 600 may be performed using devices of system 100 (FIG. 1) to establish one or more transformation functions for a participant, so that the participant may take part in auctions conducted using features of the present invention. As an example, process 600 is a transformation binding process for a buyer, involving interaction between a buyer operating buyer device 12a-i and an auction administrator operating auction administrator device 16 via a communication network 18 such as the Internet. As another example, process 600 is a transformation binding process for a seller, involving interaction between a seller operating seller device 12n-z and an auction administrator operating auction administrator device 16.

**[0140]** In some embodiments process 600 occurs during a participant registration process. In other embodiments, process 600 is conducted separately to establish transformation functions for particular participants. In some instances, such transformation functions may apply only to a single auction, while in other instances such transformation functions may

be utilized in multiple auctions. In some embodiments, process 600 may establish transformation functions that apply to groups or classes of participants, rather than individual participants. In some embodiments, transformation functions established by process 600 apply to all bids made by a participant. In other embodiments, process 600 establishes one or more transformation functions intended for use with one or more particular bids by a participant or set of participants.

**[0141]** Process 600 begins at 602 where the participant is identified. This identification may involve the participant providing information used to populate, for example, participant database 200 (FIG. 4). For example, processing at 602 may involve prompting the participant to enter basic information about itself, including contact information, a participant name, etc.

**[0142]** The participant may be identified by any of a number of other techniques as well. For example, a participant interacting via e-mail may be identified by its e-mail address. A participant interacting via a Web-site may be identified by a user name, and the participant's identity may be authenticated using a password verification process. Participants may also be identified by an identification number, such as an account number, a credit or debit card number, or a social security number. For XML and EDI transactions, the participant could be identified by fields located within XML or EDI messages. Participants interacting via facsimile or telephone may be identified using information about the originating telephone number. Participants could also be identified using cookies stored on a participant device 12.

**[0143]** Once the participant has been identified at 602, processing continues to 604 where participant attribute information is received. This attribute information is used to generate, select, or otherwise establish transformation function(s) for the participant. Participant attribute information may include any information useful or necessary to establish one or more transformation functions for the participant. For example, information received at 604 may include: a preferred currency of the participant; information specifying whether the participant has a particular

relationship with one or more other participants (e.g., as a preferred customer of one or more sellers, etc.); information specifying a preferred configuration of one or more items; etc. Information may also be identified specifying a credit history or other details regarding the participants purchasing history.

**[0144]** Information received at 604 may also include logistics information for a particular participant, such as anticipated shipping costs, duties, excise taxes, value-added taxes, sales taxes, expediting fees, handling charges, service charges, or the like. Information received at 604 may also include information identifying demographic, psychographic, business, or industry attributes of the participant. Other information may also be received, including information identifying required or preferred service levels, warranty terms, payment terms, preferred shipping mode, preferred shipping route, shipping payment terms, financing terms, and other ancillary terms and conditions or services required or preferred by a particular participant.

**[0145]** In one embodiment, this information may be solicited using a series of registration questions that are presented to the participant for response. For example, in embodiments where the participant is operating a participant device and interacting with auction administrator device via the Internet, this information may be solicited by presenting the participant with a set of forms for entry and/or a checklist of options that may be selected by the participant. Other methods of soliciting and collecting information may also be used to establish transformation function(s). For example, third party databases may be accessed to collect some information. Such third party databases may include, for example: credit service bureaus, banks, rating agencies, insurance companies, medical agencies, check processing agencies, advertising agencies, motor vehicle departments, census bureaus, credit card agencies, governmental bodies, non-governmental organizations, non-profit organizations, or the like.

**[0146]** Once attribute information has been received at 604, processing continues to 606 where one or more transformation functions are

established for the participant. Transformation functions may be established in any of a number of different ways. For example, an auction administrator operating auction administrator device 16 may establish a set list of transformation functions and qualifications for those functions. In such an embodiment, processing at 606 may simply involve matching the established transformation functions with participant attribute information received at 604 to identify those functions that apply to a particular participant. For example, the auction administrator may determine that only participants who have a long and active bidding history are eligible for a transformation function that allows a participant to receive reduced auction fees. A participant who qualifies for this particular transformation function may be associated with the transformation function by, for example, storing information that is accessible to auction administrator device 100 that associates the function identifier 402 in transformation function database 400 (FIG. 6) with the participant identifier 202 in participant database 200 (FIG. 4).

**[0147]** In some embodiments, transformation function(s) for a particular participant may depend on a relationship the participant has with another participant. For example, a buyer who has a preferred customer status with a seller may be eligible to receive a discount on items offered by that seller. Processing at 606 may include the identification of such relationships and such transformation functions. Again, the participant and the transformation function may be associated with each other by storing information accessible to auction administrator device 100 (e.g., by storing the relevant information in participant database 200 or in some other data store).

**[0148]** Processing at 606 may include the establishment of a new transformation function as well. For example, a seller may give a unique discount to a particular buyer. This unique discount may be defined in transformation function database 400 (FIG. 6) and associated with the appropriate participant. Processing at 606 may also include the establishment of transformation functions by the participant. For example, a buyer may construct a transformation function that defines a particular

configuration of an item that the buyer desires (e.g., a buyer who has a particular laptop computer configuration requirement may define this configuration in one or more transformation functions created at 606).

**[0149]** Processing at 606 may result in multiple transformation functions being created which apply to one or more participants. The transformation functions may also be defined by different entities. For example, a particular buyer may establish a transformation function which defines a desired product configuration, while a seller may define a transformation function which grants the buyer a preferred customer discount. An auction service provider may define a transformation function for the same buyer participant that defines logistics information (such as shipping preferences) for that participant. Each of these different transformation functions could be applied to a single bid made by the buyer. Those skilled in the art, upon reading this disclosure, will recognize that other techniques may be used to establish transformation functions for use in embodiments of the present invention.

#### BID PROCESS

**[0150]** Referring now to FIG. 9, a bid process 700 pursuant to one embodiment of the present invention is shown. In one embodiment, bid process 700 is performed after an auction has been established for one or more items. In one embodiment, a participant may act as a buyer in the auction after one or more transformation functions have been established (e.g., via the transformation binding process 600 described in FIG. 8 above). In some embodiments, bid process 700 and transformation binding process 600 are performed during a single session. In one embodiment, bid process 700 is conducted under the direction of auction administrator device 16.

**[0151]** Processing begins at 702 where a bid is received. In one embodiment, the bid is received by auction administrator device 16 from a participant operating device 12. Typically, the bid is received from the participant after the participant has had the opportunity to view the terms

and conditions of the auction and read a description of the item(s) being offered in the auction. Further, unless the auction is of the sealed bid type or multiple-unit type, the participant has also typically determined that it is willing to beat the current best bid on the item. In one embodiment, participant device 12a-z transmits the bid to auction administrator device 16 over a network such as the Internet. Further, in one embodiment, the participant views information about the auction by directing a Web-browser to an Internet site maintaining information about the auction.

**[0152]** The bid received at 702 may include information identifying the particular auction in which the bid is made, as well as information identifying the item bid on. The bid also typically includes terms of the bid such as a price term, a quantity term, a configuration term, and a delivery term.

**[0153]** Processing continues at 704, where one or more transformation functions associated with the bid received at 702 are identified. In one embodiment, one or more transformation functions are identified by auction administrator device 16 (e.g., by retrieving information contained in, for example, participant database 200, and/or transformation function database 400). A number of different techniques may be used to identify one or more transformation functions associated with a bid.

Transformation functions may be identified based on: an identity of the buyer, an identity of the seller (or a relationship between the seller and the buyer), information about the seller, information about the item, information about the status of the auction, information about prices for comparable items in other markets, information about the economy, information about certain supply chain status, bidding history in the current auction, bidding histories in other auctions, and/or characteristics of the bid.

**[0154]** In some embodiments, bids or buyers (or sellers) may be associated with multiple transformation functions. In such cases, the transformation function(s) to be applied may be identified based in part on the other specified transformation function(s). For example, a buyer entitled to receive a special discount may not simultaneously be entitled to a volume discount credit. As another example, a buyer who has achieved

a volume discount target may be entitled to application of a transformation function that waives an auction fee. In some cases, a transformation function associated with a bid may be identified based on a transformation function associated with a status request by the buyer (e.g., where the bid transformation function is the inverse of the status request transformation function). In some embodiments, a status request transformation function may be identified based on a bid transformation function. Transformation functions may also be identified and applied using combinations of any of the above factors.

**[0155]** In some embodiments, processing at 704 may involve checking multiple sources to identify relevant transformation function(s). For example, processing at 704 may simply involve a search for transformation functions accessible to auction administrator device 16, or it may involve a search for transformation functions at auction administrator device 16, participant device 12 and/or auction service provider device 24. Other sources of transformation functions may also be provided.

**[0156]** Once one or more transformation functions have been identified at 704, processing continues at 706 where a transformed bid is generated. This transformation may involve applying one or more transformation functions to the bid received at 702. In some embodiments, the transformation may require reference to extrinsic data. For example, a transformation function which requires conversion from one currency to another may involve reference to an external source of foreign exchange rate data. This reference may be performed in conjunction with processing at 706.

**[0157]** Once the bid has been transformed, the transformed bid is presented to the auction as the participant's bid. The transformed bid is then considered pursuant to the auction rules. For example, in a forward English auction, the transformed bid will be compared with the current best bid to determine if the transformed bid is greater than the current best bid. If it is, then the transformed bid becomes the auction's current best bid, and any subsequent bid must be greater than the transformed bid to be

successful. In this manner, embodiments of the present invention permit a participant's special circumstance to be factored into the participant's bid.

### TRANSACTION PROCESS

**[0158]** Referring now to FIG. 10, an example transaction process 800 pursuant to an embodiment of the present invention is shown. Transaction process 800 depicts a typical process that may occur in auctions implementing features of the present invention. Process 800 describes a process where one participant in an auction submits a bid and the bid is transformed and used to update a status of the auction. A second participant then checks the status of the auction. The auction status may then be transformed for viewing by the second participant.

**[0159]** Transaction process 800 begins at 802 where a bid is identified. For example, at 802, auction administrator device 16 (FIG. 1) may receive a bid on an item in an auction from a participant operating a buyer device 12. The bid identified at 802 may include information identifying the particular auction in which the bid is submitted, the buyer (or seller), as well as bid information such as a bid price and a bid quantity, etc.

**[0160]** At 804, processing determines whether a transformation function is associated with the participant who submitted the bid identified at 802. According to embodiments of the present invention, certain transformation functions may be identified based on an identity of the participant. For example, a particular buyer may be entitled to a preferred partner discount in certain situations. If processing at 804 indicates that a transformation function based on the participant's identity exists, processing continues to 806 where the transformation function is applied to the bid. Processing then continues to 808. If processing at 804 indicates that no transformation function exists which is based on the participant's identity, processing continues to 808.

**[0161]** At 808 a determination is made as to whether any transformation function(s) associated with the bid identified at 802 exist. In some embodiments, one or more transformation functions may be

identified based on information in a bid. For example, an auction may specify that a bid for a large quantity of items may receive a quantity discount. In this example, processing at 808 checks to determine if the bid is for a sufficiently large quantity of items to qualify for the quantity discount. Other types of transformation functions based on the bid may also be identified. If processing at 808 identifies one or more transformation functions based on the bid, processing continues to 810 where the bid is further transformed by the transformation function(s) identified at 808. Processing then continues to 812. If processing at 808 does not identify any transformation functions based on the bid, processing continues at 812.

**[0162]** Processing at 812 includes a determination of whether any other transformation function(s) are associated with the bid identified at 802. That is, processing at 812 involves determining if there are any transformation function(s) not associated with the participant or the bid. For example, in some embodiments, a transformation function may be identified based on the item offered at auction and/or information about the balance between supply and demand for the item. For example, if the seller is offering different configurations of an item at auction and certain configurations are exhibiting high demand, then transformations associated with those configurations may be adjusted accordingly.

**[0163]** Processing at 812 may also involve identifying one or more transformation functions based on the seller of the item. For example, if a bid is being translated into the currency of a buyer, the transformation may require the determining the functional currency of the seller in order to properly perform the conversion. Processing at 812 may involve interactions between transformations applied at 804, 808, and/or other functions applied at 812.

**[0164]** In some embodiments, processing at 812 may also include the application of transformation functions used to preserve the integrity of the auction. For example, a transformation function intended to ensure that bidding always monotonically increases in a forward English auction may be applied at 812. Transformation functions identified at 812 may also be

identified based on information from the auction service provider (e.g., where the service provider is acting as a logistics provider, settlement entity, or otherwise providing services to enhance the value of the item, or to facilitate transactions for the item).

**[0165]** Processing at 816 includes updating a status of the auction based on the transformed bid. Depending on the number and type of transformation functions identified at 804, 808 and 812, the transformed bid may be significantly different than the original bid identified at 802. In some embodiments, the transformed bid may be slightly changed (or even remain unchanged) from the original bid identified at 802. According to embodiments of the present invention, this transformation process and use of a transformed status allows differently situated participants to compete in the same auction.

**[0166]** In a typical auction, once a bid has been received and the auction status has been updated to reflect the current best bid, other potential buyers and participants in the auction will request a status of the auction. This remains unchanged in auctions conducted pursuant to embodiments of the invention. As shown in FIG. 10, a status request is received at 818. Unlike previous auctions, however, processing pursuant to embodiments of the present invention includes a determination of whether transformation(s) of the status of the auction are required (step 820). According to embodiments of the present invention, the status of the auction may be transformed to present a transformed status to some participants. Other participants may view non-transformed status.

**[0167]** According to embodiments of the present invention, processing at 820 includes making a determination of whether one or more transformations of the auction status are required. This determination may occur in any of a number of ways. For example, in some embodiments, the status request received at 818 may include an identification of the participant requesting the status. This information may be used to determine if a transformation function should be applied. Further information about the auction and the item(s) being auctioned may also be used to determine if a transformation function should be applied. As an

example, referring to participant database 200 (FIG. 4), if participant P1004 is the participant requesting status at 818, processing at 820 may involve a search of participant database 200 which will identify that participant P1004 is associated with transformation functions F1006 ("Display Status for Strategic Partners"). Note that in participant database 200, participant P1004 is also associated with transformation function F1001 ("Increase Bid by 10%). However, since transformation function F1001 is associated with a bid and not a status request, it will not be identified at 820. Although they are not described in this example, other transformations not recorded in participant database 200 (FIG. 4) may be identified at 820 based on P1004's bid, the item at auction, or other factors described herein.

**[0168]** Once a determination has been made that transformation(s) of the status are required, processing continues to 824 where the transformation(s) are applied to the status. In the example where the status request is issued by participant P1004, processing at 824 involves applying transformation function F1006 to the current status of the auction. If the current status of the auction is that the current best bid is a \$10,000 bid, then the transformed status generated at 824 will be that the current best bid is a \$9,000 bid. This transformed status is presented to the requesting party at 826. Presentation of the transformed status may be accomplished in any of a number of different ways such as, for example using XML or EDI transactions, instant messaging, e-mail, a Web-page, a telephone, facsimile, telex, etc.

**[0169]** In some embodiments of the present invention, only the transformed status will be presented to the buyer or seller at 826. In other embodiments, however, both the transformed status and the untransformed status may be presented. In yet other embodiments, the transformed status may be presented in conjunction with a partially transformed status reflecting transformation by only a subset of the transformation functions that apply to the status request. In some embodiments, information about the transformation function applied to the status request is presented to the participant, while in other embodiments,

no information about the transformation function applied to the status request is presented to the participant. In yet other embodiments, various combinations of transformed, partially transformed, or untransformed status information is presented, with or without information about the associated transformation functions.

**[0170]** If processing at 820 indicates that no transformation of status is required, processing continues to 822 where the status is presented to the requestor. This non-transformed status may be presented in any of a number of different ways, such as, for example, using XML or EDI transactions, instant messaging, e-mail, a Web-page, a telephone, facsimile, telex, etc.

**[0171]** According to embodiments of the invention, transaction process 800 may be performed a number of times during an auction. The result is a system that allows personalization of bids (including offers to purchase and offers to sell), and auction status information based on each participant's particular situation. As a result, differently-situated participants may take part in a single auction, with the bidding in the auction and presentation of auction status transformed to reflect their particular situations.

#### SELL-SIDE TRANSACTION PROCESS

**[0172]** As noted above, embodiments of the present invention may be used in the conduct of auctions commonly known as "sell-side" auctions where a number of potential buyers interact with one seller of an item (or items). According to embodiments of the present invention, one or more of the potential buyers may be associated with one or more transformation functions that may be used to transform their bids and/or to transform their view of the status of the auction. Further, the seller may also be associated with one or more transformation functions that may be used to transform the seller's view of bids received and the auction status.

**[0173]** As a result, sell-side auctions may be operated which allow many differently-situated buyers to compete against each other to buy

items via auction from a buyer. Embodiments of the present invention permit this competitive process to occur even where the item being sold at auction is non-standardized (e.g., where different buyers are attempting to buy items having different configurations, different characteristics, and different bundled services from the buyer). From the perspective of each of the buyers, the auction is conducted in the fashion of a normal sell-side auction. However, pursuant to embodiments of the present invention, transformation functions are used to transform certain bids and status requests to translate the information in the auction, thereby adapting to the individual circumstances of the various participants in the auction. The seller enjoys the benefit of active competition among these different buyers, thus receiving better prices on items sold in the auction.

**[0174]** An example of a sell-side auction conducted using features of embodiments of the present invention will now be described by referring to FIG. 11. FIG. 11 depicts a process 1000 for conducting a sell-side auction pursuant to embodiments of the present invention. A seller may register to sell items in more than one auction. In one embodiment, sell-side auction process 1000 begins at 1002 where a seller registers to sell one or more items in an auction. Registration at 1002 may involve interaction over a network between a seller operating participant device 12 and an auction administrator operating auction administrator device 16 (FIG. 1). In some embodiments, registration at 1002 may involve interaction with an auction service provider operating service provider device 24 (FIG. 1). This registration may involve the seller providing information identifying the seller and information identifying the item(s) to be sold in the auction. This information may be stored in databases located at or accessible to auction administrator device 16, participant device 12 or service provider device 24 (perhaps depending on which party is operating the auction). In some embodiments, processing at 1002 may also include the identification and/or establishment of one or more transformation functions associated with the seller. In other embodiments, any relevant transformation functions are established in conjunction with transformation binding 1006, described below.

**[0175]** Once the seller has registered to conduct the auction, processing continues at 1004 where auction rules are established. Some or all of the rules of the sell-side auction may be established jointly between the seller and the auction administrator. In one embodiment, this information is stored at auction administrator device 16 (e.g., in auction database 300).

**[0176]** Processing continues at 1005 where a buyer registers to bid on one or more items in an auction. Registration at 1005 may involve interaction over a network between a buyer operating participant device 12 and an auction administrator operating auction administrator device 16 (FIG. 1). In some embodiments, registration at 1005 may involve interaction with an auction service provider operating auction service provider device 24 (FIG. 1). This registration may involve the buyer providing information identifying the buyer and information identifying the item(s) to be purchased in the auction. This information may be stored in databases located at or accessible to auction administrator device 16, participant device 12 or service provider device 24 (perhaps depending on which party is operating the auction). In some embodiments, processing at 1005 may also include the identification and/or establishment of one or more transformation functions associated with the buyer. In other embodiments, any relevant transformation functions are established in conjunction with transformation binding 1006, described below.  
Registration at 1005 may occur in the same transaction as submission of a bid or in a different transaction (e.g., a separate registration step prior to submission of any bids).

**[0177]** Processing continues at 1006 where a transformation binding process is conducted. Processing at 1006 may be conducted as described above in conjunction with FIG. 8. In general, processing at 1006 establishes one or more transformation functions associated with one or more participants in the sell-side auction. Transformation functions may be generated, identified, and/or associated with one or more buyers, the seller, the auction service provider (if any), and the auction administrator at 1006.

**[0178]** In some embodiments, the binding process occurs prior to, or in conjunction with, the registration of the buyer or seller. In other embodiments, some or all of the binding process occurs during the conduct of the auction (e.g., before a new buyer makes a bid on an item in the auction, it may be required to go through a binding process similar to the process described in conjunction with FIG. 8). Transformation functions established at 1006 may be associated with buyers in a database, such as, for example, participant database 200 (FIG. 4). Transformation functions may be defined in a database such as, for example, transformation function database 400 (FIG. 6).

**[0179]** Processing continues at 1008 where the auction commences pursuant to the auction rules established at 1004. Commencement of the auction may involve some notification of potential buyers of the start of the auction.

**[0180]** Processing continues at 1010 where a bid to acquire an item or items offered in the auction is received. This bid may be received in any of a number of different ways known in the art. In one embodiment, the bid is received via an auction Web-page. The bid preferably includes information identifying or associated with the buyer submitting the bid. The bid will also include information identifying terms of the bid, such as a bid price and quantity. Other information may also be provided, such as required shipping terms, configuration terms, etc.

**[0181]** Some or all of the information received with the bid at 1010 is used at 1012 to identify if any transformation function(s) should be applied to the bid. Identification of any transformation function(s) associated with a bid may occur at 1012 as described above in conjunction with the bid process of FIG. 9. Identification of any transformation function(s) associated with a buyer may occur at 1012 as described above in conjunction with step 1002, step 1005, or step 1006. For example, if a bid is being translated into the currency of the seller, the transformation may require the determining the functional currency of the buyer in order to properly perform the conversion.

**[0182]** In addition, other transformation function(s) may be identified at step 1012 that are associated with neither the bid or the buyer, as described above. Furthermore, other transformations may be identified at step 1012 that define transformations on transformation functions, as described above. In some embodiments, processing at 1012 may also include the application of transformation functions used to preserve the integrity of the auction. For example, a transformation function intended to ensure that bidding always increases in a forward English auction may be applied at 1012. Transformation functions identified at 1012 may also be identified based on information from the auction service provider (e.g., where the service provider is acting as a logistics provider, settlement entity, or otherwise providing services to enhance the value of the item, or to facilitate transactions for the item).

**[0183]** If one or more transformation functions are identified at 1012, they are applied to the bid at 1014 to generate a transformed bid at 1016. This transformed bid is then used to update the status of the auction at 1018. If no transformation functions are identified at 1012, processing continues directly to 1018 and the sell-side auction status is updated to reflect receipt of the bid received at 1010. According to embodiments of the invention, appropriate transformation of certain bids allows participants with different situations to evenly participate in the same sell-side auction. Updating the auction status at 1018 may involve storing bid data in a database such as bid database 500 (FIG. 7).

**[0184]** A determination may be made at 1020 of whether the auction is complete (e.g., by checking if the auction end time has passed). If processing at 1020 indicates that the auction is complete, processing may continue to 1022 where the current best bid becomes the winning bid of the auction. The winning buyer is then notified at 1024 using any of a number of techniques known in the art.

**[0185]** Returning again to step 1020, if the auction continues, processing may either revert to 1010 (if a further bid to acquire is received) or proceed to 1026 where a status request is received. A status request may be any indication received from an entity requesting a status of the

auction. Typically, potential buyers in the auction will request information about the status of the auction so that they can make a decision of whether or not to bid on an item, or, if they have already submitted a bid, whether they should increase their bid. Sellers may issue status requests to identify the current auction price of the bid, perhaps to determine whether or not additional items should be put up to auction, or to determine which transformation functions, if any, to offer new buyers entering the auction, or to bind to existing buyers in the auction. In addition, auction service providers may issue status requests, to determine which services, if any, might be required by the current best buyer should he win the auction. Auction service providers may also issue status requests to determine which services, if any, might be required by the seller should the auction close. Auction status information might also be used by an auction service provider to determine which transformations function, if any, to offer to new buyers entering the auction, or to bind to existing buyers in the auction. Auction status information might also be used by auction participants, auction service providers, auction administrators, and third parties to discover, monitor, transfer, and record the prices of goods or services offered for sale at the auction or marketplace.

**[0186]** For example, a potential buyer operating participant device 12 may direct a Web-browser on device 12 to a Web-site hosted by auction administrator 16 to provide information on the on-going sell-side auction. The status request of 1026 may be a request to view an auction status Web-page at the Web-site hosted by the auction administrator. Any of a number of other types of requests for status may also be used.

**[0187]** Upon receipt of the request for status of the auction, processing continues at 1028 where the party requesting the status is identified. This may be performed in any of a number of different ways known in the art (e.g., by asking for identification, by detecting an identification code stored in a cookie on the requestor's device, etc.). Once the requestor has been identified, processing continues to 1030 where a determination is made as to whether one or more transformation function(s) should be applied to the

request for status. According to embodiments of the present invention,  
status information for a sell-side auction may be transformed in certain  
situations (e.g., based on an identity of the requestor, the item being  
auctioned, or other conditions). A number of types and situations in which  
such transformations may be used to transform an auction status are  
described above.

**[0188]** If processing at 1030 indicates that one or more transformation  
functions should be applied to the status, processing continues to 1032  
where the transformations are applied to generate a transformed status at  
1034. The transformed status is then used as the auction status  
presented to the requestor at 1036. If processing at 1030 does not identify  
any relevant transformation functions to be applied, processing passes  
directly to 1036 where the status presented to the requestor is the actual,  
non-transformed status of the auction. In this manner, sell-side auctions  
operated pursuant to embodiments of the present invention allow  
differently-situated participants in the auction to view the auction status  
based on their own particular situation, allowing them to make auction  
participation decisions based on information adapted to their individual  
circumstances.

**[0189]** Processing continues at 1038 where a check is made to  
determine if any further bids have been made or if any further status  
requests have been made. Processing continues in this state until a  
further bid is received, a further status request is made, or the auction  
ends. If a further bid is made, processing reverts to 1010 and the process  
described above repeats. If a further status request is received,  
processing reverts to 1026 and the process described above repeats from  
that point. If processing at 1038 indicates that no further bids are made,  
and a determination is made that the auction is complete, processing may  
continue to 1040 where the current best bid becomes the winning bid of  
the auction. The winning buyer is then notified at 1042 using any of a  
number of techniques known in the art.

## BUY-SIDE TRANSACTION PROCESS

**[0190]** As noted above, embodiments of the present invention may be used in the conduct of auctions commonly known as “buy-side” auctions where a number of potential sellers interact with one buyer of an item (or items). According to embodiments of the present invention, one or more of the potential sellers may be associated with one or more transformation functions that may be used to transform their offers and/or to transform their view of the status of the auction. Further, the buyer may also be associated with one or more transformation functions that may be used to transform the buyer’s view of offers received and the auction status.

**[0191]** As a result, buy-side auctions may be operated which allow many differently-situated sellers to compete against each other to sell items via auction to a buyer. Embodiments of the present invention permit this competitive process to occur even where the item being sold at auction is non-standardized (e.g., where different sellers are attempting to sell items having different configurations, different characteristics, and different bundled services to the buyer). From the perspective of each of the sellers, the auction is conducted in the fashion of a normal buy-side auction, however, processing pursuant to embodiments of the present invention functions to transform certain offers and status requests to translate the information in the auction, thereby adapting to the individual circumstances of the various participants in the auction. The buyer enjoys the benefit of active competition among these different sellers, thus receiving better prices on items purchased in the auction.

**[0192]** An example of a buy-side auction conducted using features of embodiments of the present invention will now be described by referring to FIG. 12. FIG. 12 depicts a process 1100 for conducting a buy-side auction pursuant to embodiments of the present invention. In one embodiment, buy-side auction process 1100 begins at 1102 where a buyer registers to acquire one or more items in an auction. A buyer may register to purchase items in more than one auction. Registration at 1102 may involve interaction over a network between a buyer operating participant

device 12 and an auction administrator operating auction administrator device 16 (FIG. 1). In some embodiments, registration at 1102 may involve interaction with an auction service provider operating service provider device 24 (FIG. 1). This registration may involve the buyer providing information identifying itself and information identifying the item(s) to be acquired in the auction. This information may be stored in databases located at or accessible to auction administrator device 16, participant device 12 or service provider device 24 (perhaps depending on which party is operating the auction). In some embodiments, processing at 1102 may also include the identification and/or establishment of one or more transformation functions associated with the buyer. In other embodiments, any relevant transformation functions are established in conjunction with transformation binding 1106, described below.

**[0193]** Once the buyer has registered to conduct the auction, processing continues at 1104 where auction rules are established. Some or all of the rules of the buy-side auction may be established jointly between the buyer and the auction administrator. In one embodiment, this information is stored at auction administrator device 16 (e.g., in auction database 300).

**[0194]** Processing continues at 1105 where a seller registers to sell one or more items in an auction. Registration at 1105 may involve interaction over a network between a seller operating participant device 12 and an auction administrator operating auction administrator device 16 (FIG. 1). In some embodiments, registration at 1105 may involve interaction with an auction service provider operating auction service provider device 24 (FIG. 1). This registration may involve the seller providing information identifying the seller and information identifying the item(s) to be sold in the auction. This information may be stored in databases located at or accessible to auction administrator device 16, participant device 12 or service provider device 24 (perhaps depending on which party is operating the auction). In some embodiments, processing at 1105 may also include the identification and/or establishment of one or more transformation functions associated with the seller. In other embodiments, any relevant transformation

functions are established in conjunction with transformation binding 1106,  
described below.

**[0195]** Processing continues at 1106 where a transformation binding process is conducted. Processing at 1106 may be conducted as described above in conjunction with FIG. 8. In general, processing at 1106 establishes one or more transformation functions associated with one or more participants in the buy-side auction. Transformation functions may be generated, identified, and/or associated with one or more sellers, the buyer, the auction service provider (if any), and the auction administrator at 1106. In some embodiments, the binding process occurs prior to, or in conjunction with, the registration of the buyer or sellers. In other embodiments, some or all of the binding process occurs during the conduct of the auction (e.g., before a new seller makes an offer to sell an item in the auction, it may be required to go through a binding process similar to the process described in conjunction with FIG. 8).  
Transformation functions established at 1106 may be associated with sellers in a database, such as, for example, participant database 200 (FIG. 4). Transformation functions may be defined in a database such as, for example, transformation function database 400 (FIG. 6).

**[0196]** Processing continues at 1108 where the auction commences pursuant to the auction rules established at 1104. Commencement of the auction may involve some notification of potential sellers of the start of the auction.

**[0197]** Processing continues at 1110 where an offer to provide an item or items requested in the buy-side auction is received. This offer may be received in any of a number of different ways known in the art. In one embodiment, the offer is received via an auction Web-page. The offer preferably includes information identifying or associated with the seller making the offer. The offer will also include information identifying terms of the offer, such as an offer price and quantity. Other information may also be provided, such as shipping terms, configuration terms, etc.

**[0198]** Some or all of the information received with the offer at 1110 is used at 1112 to identify if any transformation function(s) should be applied

to the offer. Identification of any transformation function(s) associated with an offer may occur at 1112 as described above in conjunction with the bid process of FIG. 9. Identification of any transformation function(s) associated with a seller may occur at 1112 as described above in conjunction with step 1102, step 1105, or step 1106. For example, if a bid is being translated into the currency of the buyer, the transformation may require the determining the functional currency of the seller in order to properly perform the conversion.

**[0199]** In addition, other transformation function(s) may be identified at step 1112 that are associated with neither the offer nor the seller, as described above. Furthermore, other transformations may be identified at step 1112 that define transformations on transformation functions, as described above. In some embodiments, processing at 1112 may also include the application of transformation functions used to preserve the integrity of the auction. For example, a transformation function intended to ensure that bidding always decreases in a reverse English auction may be applied at 1112. Transformation functions identified at 1112 may also be identified based on information from the auction service provider (e.g., where the service provider is acting as a logistics provider, settlement entity, or otherwise providing services to enhance the value of the item, or to facilitate transactions for the item).

**[0200]** If one or more transformation functions are identified at 1112, they are applied to the offer at 1114 to generate a transformed offer at 1116. This transformed offer is then used to update the status of the auction at 1118. If no transformation functions are identified at 1112, processing continues directly to 1118 and the buy-side auction status is updated to reflect receipt of the offer received at 1110. According to embodiments of the invention, appropriate transformation of certain offers allows participants with different situations to evenly participate in the same buy-side auction. Updating the auction status at 1118 may involve storing bid data in a database such as bid database 500 (FIG. 7).

**[0201]** A determination may be made at 1120 of whether the auction is complete (e.g., by checking if the auction end time has passed). If

processing at 1120 indicates that the auction is complete, processing may continue to 1122 where the current best offer becomes the winning offer of the auction. The winning seller is then notified at 1124 using any of a number of techniques known in the art.

**[0202]** Returning again to step 1120, if the auction continues, processing may either revert to 1110 (if a further offer to sell is received) or proceed to 1126 where a status request is received. A status request may be any indication received from an entity requesting a status of the auction. Typically, buyers in the auction will request information about the status of the auction so that they can make a decision as to whether or not to solicit additional bids for items, or to increase or decrease the lot size for items that have already been put up for bid. Buyers may also request information about the status of the auction to determine which transformation functions, if any, to apply to new sellers entering the auction, or to bind to existing sellers in the auction. Sellers may issue status requests to identify the current auction price of the offer, perhaps to determine whether or not additional bids should be placed In addition, auction service providers may issue status requests to determine which services, if any, might be required by the current best seller should he win the auction. Auction service providers may also issue status requests to determine which services, if any, might be required by the current buyer should the auction close. Auction status information might also be used by an auction service provider to determine which transformations function, if any, to offer to new sellers or buyers entering the auction, or to bind to existing sellers or buyers in the auction. Auction status information might also be used by auction participants, auction service providers, auction administrators, and third parties to discover, monitor, transfer, and record the prices of goods or services offered for sale at the auction or marketplace.

**[0203]** For example, a potential seller operating participant device 12 may direct a Web-browser on device 12 to a Web-site hosted by auction administrator 16 to provide information on the on-going buy-side auction. The status request of 1126 may be a request to view an auction status

Web-page at the Web-site hosted by the auction administrator. Any of a number of other types of requests for status may also be used.

**[0204]** Upon receipt of the request for status of the auction, processing continues at 1128 where the party requesting the status is identified. This may be performed in any of a number of different ways known in the art (e.g., by asking for identification, by detecting an identification code stored in a cookie on the requestor's device, etc.). Once the requestor has been identified, processing continues to 1130 where a determination is made as to whether one or more transformation function(s) should be applied to the request for status. According to embodiments of the present invention, status information for a buy-side auction may be transformed in certain situations (e.g., based on an identity of the requestor, the item being auctioned, or other conditions). A number of types and situations in which such transformations may be used to transform an auction status are described above.

**[0205]** If processing at 1130 indicates that one or more transformation functions should be applied to the status, processing continues to 1132 where the transformations are applied to generate a transformed status at 1134. The transformed status is then used as the auction status presented to the requestor at 1136. If processing at 1130 does not identify any relevant transformation functions to be applied, processing passes directly to 1136 where the status presented to the requestor is the actual, non-transformed status of the auction. In this manner, buy-side auctions operated pursuant to embodiments of the present invention allow differently-situated participants in the auction to view the auction status based on their own particular situation, allowing them to make auction participation decisions based on information adapted to their individual circumstances.

**[0206]** Processing continues at 1138 where a check is made to determine if any further offers have been made or if any further status requests have been made. Processing continues in this state until a further offer is received, a further status request is made, or the auction ends. If a further offer is made, processing reverts to 1110 and the

process described above repeats. If a further status request is received, processing reverts to 1126 and the process described above repeats from that point. If processing at 1138 indicates that no further offers are made, and a determination is made that the auction is complete, processing may continue to 1140 where the current best offer becomes the winning offer of the auction. The winning seller is then notified at 1142 using any of a number of techniques known in the art.

## TWO-SIDED TRANSACTION PROCESS

**[0207]** As noted above, embodiments of the present invention may be used in the conduct of auctions commonly known as "two-sided" or "double" auctions where a number of potential buyers interact with a number of potential sellers of an item (or items). According to embodiments of the present invention, one or more of the participating buyers and sellers may be associated with one or more transformation functions that may be used to transform their bids and offers (sometimes referred to as "asks" in the art) and/or to transform their view of the status of the auction.

**[0208]** As a result, two-sided auctions may be operated which allow many differently-situated sellers to compete against each other to sell items via auction and many differently-situated buyers to compete against each other to buy items via the auction. Embodiments of the present invention permit this competitive process to occur even where the item being sold at auction is non-standardized (e.g., where different sellers are attempting to sell items having different configurations, different characteristics, and different bundled services to different buyers who have different desires or needs). From the perspective of each of the participants, the auction is conducted in the fashion of a normal two-sided auction, however, processing pursuant to embodiments of the present invention functions to transform certain bids, offers and status requests to translate the information in the auction, thereby adapting to the individual circumstances of the various participants in the auction. The buyer enjoys

the benefit of active and competitive submission of offers by sellers, and the seller enjoys the benefit of bid competition among buyers.

**[0209]** An example of a two-sided auction conducted using features of embodiments of the present invention will now be described by referring to FIG. 13. FIG. 13 depicts a process 1200 for conducting a two-sided auction pursuant to embodiments of the present invention. In one embodiment, two-sided auction process 1200 begins at 1202 where one or more auction items are identified. Processing at 1202 may include identifying a category or type of item to be auctioned (e.g., a class of a commodity or near-commodity, such as a type of precious metal or a type of Dynamic Random Access Memory (DRAM) device may be identified at 1202). This identification at 1202, in some embodiments, involves interaction with an auction service provider operating service provider device 24 (FIG. 1).

**[0210]** In some embodiments, this identification at 1202 involves a seller registering to sell items in at least one auction. Seller registration at 1202 may involve interaction over a network between a seller operating participant device 12 and an auction administrator operating auction administrator device 16 (FIG. 1). In some embodiments, seller registration at 1202 may involve interaction with an auction service provider operating service provider device 24 (FIG. 1). This registration may involve the seller providing information identifying the seller and information identifying the item(s) to be sold in the auction. This information may be stored in databases located at or accessible to auction administrator device 16, participant device 12 or service provider device 24 (perhaps depending on which party is operating the auction). In some embodiments, processing at 1202 may also include the identification and/or establishment of one or more transformation functions associated with the seller. In other embodiments, any relevant transformation functions are established in conjunction with transformation binding 1206, described below.

**[0211]** In some embodiments, this identification at 1202 involves a buyer registering to buy items in at least one auction. Buyer registration at 1202 may involve interaction over a network between a buyer operating

participant device 12 and an auction administrator operating auction administrator device 16 (FIG. 1). In some embodiments, buyer registration at 1202 may involve interaction with an auction service provider operating service provider device 24 (FIG. 1). This registration may involve the buyer providing information identifying the buyer and information identifying the item(s) to be purchased in the auction. This information may be stored in databases located at or accessible to auction administrator device 16, participant device 12 or service provider device 24 (perhaps depending on which party is operating the auction). In some embodiments, processing at 1202 may also include the identification and/or establishment of one or more transformation functions associated with the buyer. In other embodiments, any relevant transformation functions are established in conjunction with transformation binding 1206, described below.

**[0212]** Processing continues at 1204 where auction rules are established. Some or all of the rules of the two-sided auction may be established by the auction administrator. In one embodiment, this information is stored at auction administrator device 16 (e.g., in auction database 300).

**[0213]** Processing continues at 1206 where a transformation binding process is conducted. Processing at 1206 may be conducted as described above in conjunction with FIG. 8. In general, processing at 1206 establishes one or more transformation functions associated with one or more participants in the two-sided auction. Transformation functions may be generated, identified, and/or associated with one or more buyers, one or more sellers, one or more auction service provider(s) (if any), and the auction administrator at 1206. In some embodiments, the binding process occurs prior to, or in conjunction with, the registration of one or more of the participants in the auction, as mentioned above. For example, each potential participant may be required to undertake a registration process in conjunction with, or prior to, transformation binding 1206.

**[0214]** In other embodiments, some or all of the binding process occurs during the conduct of the auction (e.g., before a new buyer makes a bid for an item in the auction, the buyer may be required to go through a binding process similar to the process described in conjunction with FIG. 8).  
Transformation functions established at 1206 may be associated with buyers and sellers in a database, such as, for example, participant database 200 (FIG. 4). Transformation functions may be defined in a database such as, for example, transformation function database 400 (FIG. 6).

**[0215]** Processing continues at 1208 where the auction commences pursuant to the auction rules established at 1204. Commencement of the auction may involve some notification of potential buyers and sellers of the start of the auction.

**[0216]** Processing continues at 1210 where bids and offers for items in the two-sided auction are received. These bids and offers may be received in any of a number of different ways known in the art. In one embodiment, the bids and offers are received via an auction Web-page. The bid or offer preferably includes information identifying or associated with the buyer or seller submitting the bid or offer. The bid or offer will also include information identifying terms of the bid or offer, such as a bid or offer price and quantity. Other information may also be provided, such as required shipping terms, configuration terms, etc.

**[0217]** Some or all of the information received with the bid or offer at 1210 is used at 1212 to identify if any transformation function(s) should be applied to the bid or offer. Identification of any transformation function(s) associated with a bid or offer may occur at 1212 as described above in conjunction with the bid process of FIG. 9. Identification of any transformation function(s) associated with a bid or offer may occur at 1212 as described above in conjunction with step 1202, or step 1206. For example, if a bid or offer is being translated into the default currency of the auction or exchange, the transformation may require determining the functional currency of the buyer or seller in order to properly perform the conversion.

**[0218]** In addition, other transformation function(s) may be identified at step 1212 that are not associated with either the bid/offer or buyer/seller as described above. Furthermore, other transformations may be identified at step 1212 that define transformations on transformation functions, as described above. In some embodiments, processing at 1212 may also include the application of transformation functions used to preserve the integrity of the auction. For example, a transformation function intended to ensure that successive price changes in bids and offers are within some range could be applied at 1212. Transformation functions identified at 1212 may also be identified based on information from the auction service provider (e.g., where the service provider is acting as a logistics provider, settlement entity, or otherwise providing services to enhance the value of the item, or to facilitate transactions for the item).

**[0219]** If one or more transformation functions are identified at 1212, they are applied to the bid/offer at 1214 to generate a transformed bid/offer at 1216. This transformed bid/offer is then used to update the status of the auction at 1218. If no transformation functions are identified at 1212, processing continues directly to 1218 and the two-sided auction status is updated to reflect receipt of the bid/offer received at 1210. According to embodiments of the invention, appropriate transformation of certain bids or offers allow participants with different situations to evenly participate in the same two-sided auction. Updating the auction status at 1218 may involve storing bid and offer data in a database such as bid database 500 (FIG. 7). A corresponding offer database (not shown) may be provided which is used in conjunction with bid database 500 to function as a so-called "order book" as is known in the art of double-auctions. Such an offer database may include data identifying offers which have been received by sellers participating in one or more auctions. Each entry of the database may identify, for example, the auction in which the offer has been received, the seller submitting the offer, one or more transformation functions which apply to the offer, and offer information (such as, for example, an offer price, an offer quantity, and an offered configuration). Other information

useful or needed to particularly identify offers received may also be provided.

**[0220]** A determination may be made at 1220 as to whether there is a match between at least one bid and at least one offer (e.g., by checking to see if a bid or transformed bid is greater than or equal to an offer or a transformed offer). Determining if there is a match may occur using any of a number of techniques known in the art.

**[0221]** If processing at 1220 indicates that there is a match, processing may continue to 1222 where the transaction is cleared. Processing continues at 1224 where the buyer who submitted the cleared bid is notified and where the seller who submitted the cleared offer is notified of the cleared transaction. This notification may occur using any of a number of techniques known in the art.

**[0222]** Returning again to step 1220, if the auction continues, processing may either revert to 1210 (if further bids and offers are received) or proceed to 1226 if a status request is received. A status request may be any indication received from an entity requesting a status of the auction. Typically, potential buyers and sellers in the auction will request information about the status of the auction so that they can make a decision of whether or not to submit a bid or an offer on an item, or, if they have already submitted a bid or an offer, whether they should increase or decrease their bid or offer. Auction service providers may issue status requests to determine which services, if any, might be required by buyers or sellers should their orders be filled in the auction. Auction status information might also be used by an auction service provider to determine which transformation function, if any, to offer to new buyers or sellers entering the auction, or to bind to existing buyers and sellers in the auction. Auction status information might also be used by auction participants, auction service providers, auction administrators, and third parties to discover, monitor, transfer, and record the prices of goods or services offered for sale at the auction or marketplace.

**[0223]** For example, a potential buyer or seller operating participant device 12 may direct a Web-browser on device 12 to a Web-site hosted by

auction administrator 16 to provide information on the on-going two-sided auction. The status request of 1226 may be a request to view an auction status Web-page at the Web-site hosted by the auction administrator. Any of a number of other types of requests for status may also be used.

**[0224]** Upon receipt of the request for status of the auction, processing continues at 1228 where the party requesting the status is identified. This may be performed in any of a number of different ways known in the art (e.g., by asking for identification, by detecting an identification code stored in a cookie on the requestor's device, etc.). Once the requestor has been identified, processing continues to 1230 where a determination is made as to whether one or more transformation function(s) should be applied to the request for status. According to embodiments of the present invention, status information for a two-sided auction may be transformed in certain situations (e.g., based on an identity of the requestor, the item being auctioned, or other conditions). A number of types and situations in which such transformations may be used to transform an auction status are described above.

**[0225]** If processing at 1230 indicates that one or more transformation functions should be applied to the status, processing continues to 1232 where the transformations are applied to generate a transformed status at 1234. The transformed status is then used as the auction status presented to the requestor at 1236. If processing at 1230 does not identify any relevant transformation functions to be applied, processing passes directly to 1236 where the status presented to the requestor is the actual, non-transformed status of the auction. In this manner, two-sided auctions operated pursuant to embodiments of the present invention allow differently-situated participants in the auction to view the auction status based on their own particular situation, allowing them to make auction participation decisions based on information adapted to their individual circumstances.

**[0226]** Processing continues at 1238 where a check is made to determine if any further bids or offers have been received or if further status requests have been made. Processing continues in this state until

a further bid or offer is received, a further status request is made, or the auction ends. If a further bid or offer is made, processing reverts to 1210 and the process described above repeats. If a further status request is received, processing reverts to 1226 and the process described above repeats from that point. If processing at 1238 indicates that no further bids, offers, or status requests have been made, and a determination is made that the auction is complete, processing may continue to 1240 where the auction terminates.

#### CUSTOMIZED FINANCING FUNCTIONS

**[0227]** Pursuant to some embodiments of the present invention, one or more participants may be associated with one or more customized financing terms which may be applied to bids, status requests, or other information exchanges via one or more transformation functions 20 (or, as item 20 may be referred to in this subsection, "financing" functions 20). Financing functions 20, as will be described further below, are used to establish, define, adapt, modify, adapt, translate or otherwise transform financing information used in an auction.

**[0228]** As an example, a participant such as Participant A (Buyer 12a in FIG. 1) may have established an associated financing function 20a (e.g., this function may be established prior to or during the conduct of the auction) which transforms some or all of the bids submitted by Participant A by applying one or more financing terms to each bid. For example, financing function 20a may define lease terms that have been established by Participant A that apply to certain types of bids made by Participant A (e.g., Participant A may wish to lease certain types of capital equipment having a cost of greater than \$100,000, and may desire that the lease be a 20 year lease with a down payment of 10% of the item cost). Other participants may have different financing functions associated with them. For example, Participant B (Buyer 12b in FIG. 1), acting as a buyer in the same auction as Participant A may be associated with a financing function 20b that automatically applies Participant B's desire to enter into a loan to

purchase certain types of goods, over a particular term and at a particular rate.

**[0229]** Financing functions 20 may also be used to modify, adapt, translate or otherwise transform financing information that is transmitted from auction administrator device 16 to one or more participant devices 12. For example, after the auction status has been updated to reflect Participant B's bid (in the example above), Participant A may request information regarding the status of the auction. The status may be transformed using the financing function 20a established for Participant A to present the information in the context of Participant A's desired financing (i.e., in terms of Participant A's preferred leasing terms). These financing functions and their application will be described in more detail further below.

**[0230]** In some embodiments, further participant information may be specified (e.g., in participant database 200) to assist in the precise selection and identification of financing functions. This information could include, for example, information that is useful (or necessary) in determining whether to authorize the establishment of a particular financing term for a particular participant. For example, information about a participant's credit history may be provided (e.g., such as a credit score from a so-called FICO score generated by credit scoring models licensed by Fair, Isaacs & Co) to allow a lender or financial institution to make an approval decision for a particular financing term. Those skilled in the art, upon reading this disclosure, will recognize that other information may also be provided which may allow the creation, selection, approval and application of appropriate financing functions for a particular participant.

**[0231]** Referring to FIG. 14, a table represents a financing function database 400 that may be stored at (or accessible to) auction administrator device 100 (FIG. 2) according to an embodiment of the present invention. The table includes a number of entries identifying different financing functions that may be applied to information in auctions operated pursuant to embodiments of the present invention.

**[0232]** The table also defines a number of fields 1402-1412 for each of the entries. The fields specify: a function identifier 1402, a buyer identifier 1404, a seller identifier 1406, an auction identifier 1408, financing rule(s) 1410, and a description 1412. The information in financing function database 1400 may be created and updated, for example, by an auction administrator based on information received from individual participants in an auction. In one embodiment, some or all of the information in financing function database 1400 is generated and stored prior to commencement of an auction. In other embodiments, some or all of the information in financing function database 1400 is generated and stored during an auction. In either embodiment, the process described below in conjunction with FIG. 15 may be used to develop, identify and generate financing functions.

**[0233]** Function identifier 1402 may be, for example, an alphanumeric code associated with a particular financing function that may be used in an auction operated pursuant to embodiments of the present invention. A number of different function identifiers 1402 may be established for use in an auction.

**[0234]** Buyer identifier 1404 may be the same as or related to a participant identifier 202 from participant database 200 (FIG. 3) and is used to identify a particular participant in an auction who is acting as a buyer in the auction and who has established (or is establishing) one or more customized financing terms pursuant to embodiments of the present invention. In some embodiments, a particular financing function identified by function identifier 1402 may apply to all buyers in an auction.

**[0235]** Seller identifier 1406 may be the same as or related to a participant identifier 202 from participant database 200 (FIG. 3) and is used to identify a particular participant in an auction who is acting as a seller in the auction. The seller identifier may be identified based on information provided by the buyer while the buyer is establishing customized financing terms, or the seller may be automatically identified by the system based on information provided about the auction. In some embodiments, financing functions may be established independent of a

particular seller (e.g., a buyer's financing function apply to all transactions by that participant, with any seller, and in any auction).

**[0236]** Auction identifier 408 may be the same as or related to an auction identifier 502 from auction database 500 (FIG. 6) and is used to identify a particular auction in which the participant identified by buyer identifier 1404 is participating. In some embodiments, financing functions may be established independent of a particular auction (e.g., the buyer may establish customized financing terms which will apply to any auction in which the buyer participates). In other embodiments, the financing function identified by function identifier 1402 may be established for a particular buyer only for use in a particular auction for items sold by a particular seller.

**[0237]** Financing function rule(s) 1410 may be, for example, information identifying one or more rules that are applied when the financing function identified by function identifier 1402 is used. Rule(s) 1404 may include any of a number of different types of rules including rules that operate on a bid in an auction to define financing terms for the bid. In some embodiments, financing rules(s) 1410 provide sufficient detail to fully define terms of a financing instrument to be used to acquire an item at auction. In other embodiments, financing rule(s) 1410 specify certain customized terms desired by the buyer identified by buyer identifier 1404. In some embodiments, financing rule(s) 1410 are selected by the seller or other participants in the auction, alone or jointly.

**[0238]** For example, in some embodiments, financing rule(s) may be established which depend on the identity of the seller (e.g., the party offering to sell items via auction). In some embodiments, the seller may offer particular leasing or financing terms to buyers who purchase a certain dollar amount of items from the seller. These leasing terms may be identified and applied via rules contained in financing rule(s) 1410.

**[0239]** As another example, in some embodiments, the application of a particular financing rule will depend on the identity of both the seller (e.g., the party offering to sell items via auction) and the buyer (e.g., the party offering to buy items via auction). For example, in some embodiments, the

seller may offer preferential loan terms to particular buyers with which the seller has a long-standing relationship. This preferential status may be identified and applied via rules contained in financing rule(s) 1410.

**[0240]** As another example, in some embodiments, the application of a particular financing rule will depend on the identity of both the seller (e.g., the party offering to sell items via auction) and the nature or identity of the item posted for sale or purchase via the auction. For example, in some embodiments, the seller may offer particular financing terms only on selected items, selected sets of items, or selected classes of items. This preferential status may be identified and applied via rules contained in financing rule(s) 1410.

**[0241]** In one embodiment, financing rule(s) 1410 are established prior to the conduct of an auction. In other embodiments, financing rule(s) 1410 are established during the conduct of an auction. In either embodiment, a selection process, such as the process described below in conjunction with FIG. 15 may be used to establish the rules.

**[0242]** In general, financing rule(s) 1410 define the financing terms associated with the particular financing arrangement associated with the sale or purchase of an item via the auction. Different types of financing instruments may include one or more financing terms such as a financing price, a term of the financing instrument, or other terms as described above.

**[0243]** In certain embodiments, auction service provider 24 (FIG. 1) may provide services to facilitate the provision of a lease, loan, or other financing arrangement. In these embodiments, additional information is stored in financing function database 1400 or in a related database, including the identity of the auction service provider, the services provided, and any rules or terms associated with the services. For example, a bank might provide financing for a transaction between a buyer and a seller in an auction comprising a loan with a \$500 down payment, monthly payments, a 5 year term, and an annual simple interest rate of 10%. In one embodiment of the present invention, this information would be stored using an entry in financing function database 1400 identifying the bank.

probably using an additional field. Rule(s) 1410 would then specify the terms associated with the loan.

**[0244]** Bid database 500 may include data identifying one or more financing function(s) which will be applied to a participant's bid if the bid is accepted and bound in the auction (e.g., if the participant's bid is accepted by the seller).

**[0245]** Referring now to FIG. 15, a process 1500 for establishing customized financing terms pursuant to one embodiment of the present invention is shown. Process 1500 may be performed using devices of system 100 (FIG. 1) so that the participant may establish customized financing terms using features of the present invention. As an example, process 1500 is a process conducted for a prospective buyer in one or more auctions, involving interaction between the buyer operating buyer device 12a-i and an auction administrator operating auction administrator device 16 via a communication network 18 such as the Internet, resulting in the establishment of one or more customized financing terms for the buyer. As another example, process 1500 is a process for a prospective seller in one or more auctions, involving interaction between the seller operating seller device 12n-z and an auction administrator operating auction administrator device 16, resulting in the establishment of one or more customized financing terms for the seller. Other customized financing terms may be established jointly by buyers and sellers.

**[0246]** In some embodiments process 1500 occurs during a participant registration process or otherwise prior to the conduct of an auction in which the customized financing terms will be used. In other embodiments, process 1500 is conducted in conjunction with a bidding process (e.g., such as the process described below in conjunction with FIG. 16) to establish customized financing terms for a particular bid. In some instances, such financing functions may apply only to a single auction, while in other instances such financing functions may be utilized in multiple auctions. In some embodiments, process 1500 may establish financing functions that apply to groups or classes of participants, rather than individual participants. In some embodiments, functions established by

process 1500 apply to all bids made by a participant. In other embodiments, process 1500 establishes one or more financing functions intended for use with one or more particular bids by a participant or set of participants.

**[0247]** In some embodiments, the terms of the financing instrument may be binding on one or more auction participants. For example, one or more auction participants may agree to the terms prior to participating in a winning bid or offer, and their participation in the winning bid constitutes a binding commitment to abide by the terms of the financing instrument. In other embodiments, the auction participants may have the right but not the obligation to enter into the financing agreement specified during the registration process or otherwise prior to or during the conduct of an auction. In other embodiments, the financing arrangement may be offered on a "best efforts" basis, and success in the auction may not constitute a binding commitment to provide or to enter into a financing arrangement. In some embodiments, information about financing arrangement bindings will be presented to (or by) one or more parties to a financing arrangement, or to (or by) entities facilitating a financing arrangement.

**[0248]** Process 1500 begins at 1502 where the participant is identified. This identification may involve the participant providing information used to populate, for example, participant database 200 (FIG. 3). For example, processing at 1502 may involve prompting the participant to enter basic information, including contact information, a participant name, a participant identifier, etc.

**[0249]** The participant may be identified by any of a number of other techniques as well. Once the participant has been identified at 1502, processing continues at 1504 where participant attribute information is received. This attribute information is used to generate, select, or otherwise establish financing function(s) for the participant. Participant attribute information may include any information useful or necessary to establish one or more customized financing terms for the participant. For example, information received at 1504 may include: a preferred currency of the participant; information specifying whether the participant has a

particular relationship with one or more other participants (e.g., as a preferred customer of one or more sellers, etc.); information specifying a credit history of the participant, information specifying a particular type of preferred financing, information specifying a particular lender or financial institution preferred by the participant; etc.

**[0250]** In one embodiment, this information may be solicited using a series of questions that are presented to the participant for response. For example, in embodiments where the participant is operating a participant device and interacting with auction administrator device via the Internet, this information may be solicited by presenting the participant with a set of forms for entry and/or a checklist of options that may be selected by the participant. Other methods of soliciting and collecting information may also be used to establish financing function(s). For example, third party databases may be accessed to collect some information. Such third party databases may include, for example: credit service bureaus, banks, rating agencies, insurance companies, medical agencies, check processing agencies, advertising agencies, motor vehicle departments, census bureaus, credit card agencies, governmental bodies, non-governmental organizations, non-profit organizations, or the like.

**[0251]** Processing at 1504 may be performed in conjunction with one or more transformation binding processes as described elsewhere in this application.

**[0252]** Once attribute information has been received at 1504, processing continues to 1506 where determination is made whether a request for customized financing has been received. If the participant has not chosen to establish customized financing terms, processing terminates at 1507 (e.g., the auction may progress in a typical fashion without customized financing). If the participant has chosen to establish customized financing terms, processing continues at 1508 where a determination is made whether the one or more pre-established terms may be utilized. For example, in one embodiment, a number of financing functions may have been previously established and stored in financing function database 1400 (FIG. 14). Processing at 1508 operates to

determine if the participant identified at 1502 wishes to utilize any of these previously-established terms. If the participant so desires, processing continues at 1510 where the pre-established terms are identified. For example, this may involve performing a look-up of database 1400 to determine which pre-established terms apply to the participant.

**[0253]** In some embodiments, a determination may be made at 1512 whether the pre-established terms identified at 1510 are approved for use by the participant identified at 1502. This approval determination may include, for example, a credit approval, an approval of the seller, or the like. Once the pre-established terms are identified and approved processing continues to 1522 where the terms are established as the participant's customized financing terms.

**[0254]** In some embodiments, no pre-established terms will be available for a particular participant, or the participant may choose not to utilize the pre-established terms. In such a situation, processing will proceed from 1508 to 1514 where the participant, operating a participant device 12, will interact with other devices in system 100 to identify a type of financing desired. For example, the participant may be given the choice to select either a loan or a lease as a type of financing instrument.

**[0255]** In some embodiments, identifying a type of financing may require interactions with other participant devices (e.g. in the case where a seller is providing a loan or a lease to buyer), an auction administrator (e.g. in the case where the auction administrator is offering financing as a value-added service in an exchange, marketplace, or collaboration network), or an auction service provider (e.g. in the case where a financial services entity acting as an auction service provider offers third-party financing as a value-added service in an exchange, marketplace, or collaboration network). In some embodiments, identifying a type of financing may require interactions with a combination of multiple devices in system 100. For example, an auction participant may be presented a menu of financing types provided by different entities, including auction participants, auction administrators, and auction service providers. In some embodiments, individual financing choices may require interactions

with a combination of multiple devices in system 100. For example, a certain type of financing may require the participation of a bank to provide financing, a leasing service provider to manage a lease, an insurance company to provide insurance on the item being transacted at auction, and a manufacturer who agrees to repurchase the item being transacted at auction for a specified residual value.

**[0256]** Once a type of financing has been selected, processing continues at 1516 where one or more options for the selected financing type are presented to the participant. For example, if a loan is selected, the participant may be presented with options such as: the term of the loan, the lender, the price (e.g., interest charged) for the loan, the down payment required, etc. If a lease is selected, the participant may be presented with lease options, such as: the term of the lease, the lessor, the price (e.g., up front fees and lease fees), the down payment required, the residual value of the item leased, etc. In embodiments where process 1500 is conducted during an auction (e.g., when the item for sale and the seller are known), some or all of the options presented at 1516 may be tailored to the auction. For example, if a lease has been selected, one or more residual values of the item may be calculated by system 100 and presented to the participant at 1516. Processing at 1516 may entail reference to one or more external sources of data. For example, the residual value of an item may be referenced by consulting a source of residual data for the item. As another example, various prices of loans may be determined by reference to current rate information from a prospective lender.

**[0257]** In some embodiments, processing at 1516 may involve interactions with one or more auction participants, auction administrators, or auction service providers. In some embodiments, presenting options for the selected type of financing may require interactions with other participant devices (e.g. in the case where a seller is providing a loan or a lease to buyer), an auction administrator (e.g. in the case where the auction administrator is offering financing as a value-added service in an exchange, marketplace, or collaboration network), or an auction service

provider (e.g. in the case where a financial services entity acting as an auction service provider offers third-party financing as a value-added service in an exchange, marketplace, or collaboration network). In some embodiments, presenting options for the selected type of financing may require interactions with a combination of multiple devices in system 100. For example, an auction participant may be presented a menu of financing options provided by different entities, including auction participants, auction administrators, and auction service providers. In some embodiments, individual financing choices may require interactions with a combination of multiple devices in system 100. For example, a certain financing instrument may require the participation of a bank to provide financing, a leasing service provider to manage a lease, an insurance company to provide insurance on the item being transacted at auction, and a manufacturer who agrees to repurchase the item being transacted at auction for a specified residual value.

**[0258]** Upon presentation of available options, the participant is given the ability to select financing terms at 1518. As discussed in reference to steps 1514 and 1516, in some embodiments, processing at 1518 may involve interactions with one or more auction participants, auction administrators, or auction service providers. These options may be presented to the participant for selection in an iterative fashion at 1516 and 1518, or in some embodiments 1514, 1516 and 1518, until each desired term has been customized by the participant.

**[0259]** Processing continues at 1520 where a determination is made whether the financing terms selected by the participant are approved. For example, this may entail performing a loan or a lease analysis (as is known in the art) to arrive at an approval or decline for the particular financing terms selected by the participant. If the financing terms are declined, processing reverts to 1518 where the participant may be given the chance to select other financing terms. If processing at 1520 indicates that the selected financing terms are approved, processing continues at 1522 where the selected and approved terms are established as the participant's customized financing terms. In one embodiment, the

established terms are assigned a function identifier 1402 and associated with the participant and stored in financing function database 1400 (FIG. 14). In some embodiments, only pre-approved types of financing, financing options, and financing terms are presented to the participant at one or more of steps 1514, 1516 and 1518. In cases where it is not necessary to make a determination at step 1520 as to whether the financing terms selected by the participant are approved, processing continues via step 1520 directly to step 1522 without initiating an approval process.

**[0260]** According to embodiments of the invention, process 1500 may be performed a number of times prior to or during an auction. The result is a system that allows personalization of bids (including offers to purchase and offers to sell) with customized financing terms, and the presentation of auction status information based on each participant's particular financing situation. As a result, differently-situated participants may take part in a single auction, allowing each participant to establish and apply customized financing terms in the auction.

**[0261]** A bid process 1600 incorporating features of embodiments of the present invention will now be described by referring to FIG. 16. In one embodiment, bid process 1600 is performed after an auction has been established for one or more items. In one embodiment, a participant may establish one or more customized financing terms prior to commencement of the auction by following the process 1500 described above. In other embodiments, participants may establish one or more customized financing terms during the course of the auction by following the process 1500 after submission of a bid (e.g., in conjunction with process 1600 which will now be described). In one embodiment, bid process 1600 is conducted under the direction of auction administrator device 16.

**[0262]** In other embodiments, bid process 1600 is conducted under the direction of an auction participant device 12 or an auction service provider device 24. In other embodiments, bid process 1600 is conducted under the direction of one or more of an auction administrator device 16, an auction participant device 12 and an auction service provider device 24.

**[0263]** Processing begins at 1602 where a bid is received. In one embodiment, the bid is received by auction administrator device 16 from a buyer operating buyer device 12a-i. Typically, the bid is received from the buyer after the buyer has had the opportunity to view the terms and conditions of the auction and read a description of the item(s) being offered in the auction. Further, unless the auction is of the sealed bid type or multiple-unit type, the buyer has also typically determined that it is willing to beat the current best bid on the item. In one embodiment, buyer device 12a-i transmits the bid to auction administrator device 16 over a network such as the Internet. Further, in one embodiment, the buyer views information about the auction by directing a Web-browser to an Internet site maintaining information about the auction.

**[0264]** The bid received at 1602 may include information identifying the particular auction in which the bid is made, as well as information identifying the item bid on. The bid also typically includes terms of the bid such as a price term, and a quantity term, but in some embodiments it may also include a configuration term, a delivery term, and other terms particular to an item being auctioned, an auction participant, or services required by an auction participant.

**[0265]** Processing continues at 1604, where the item bid on and the relevant auction are identified, e.g., using information received at 1602 or by other means. Processing continues at 1606 where any customized financing term(s) associated with the bid received at 1602 are identified. In one embodiment, one or more financing functions specifying particular customized financing terms are identified by auction administrator device 16 (e.g., by retrieving information contained in, for example, participant database 200, and/or financing function database 1400). A number of different techniques may be used to identify one or more financing functions associated with a bid. Financing functions may be identified based on: an identity of the buyer, an identity of the seller (or a relationship between the seller and the buyer), information about the seller, information about the item, information about the status of the auction, information about prices for comparable items in other markets, bidding history in the

current auction, bidding histories in other auctions, and/or characteristics of the bid.

**[0266]** In some embodiments, bids or buyers (or sellers) may be associated with multiple financing functions. In such cases, the financing function(s) to be applied may be identified based in part on the other specified financing function(s). For example, a buyer may have one financing function which identifies that the buyer's preference in certain auctions is to lease items purchased. Another financing function may be associated with the buyer which establishes particular lease terms for particular types of items. Thus, the first function (identifying leasing as a preference) may be identified and applied before the second function (identifying particular lease terms).

**[0267]** In some embodiments, processing at 1606 may involve checking multiple sources to identify relevant financing function(s). For example, processing at 1606 may simply involve a search for financing functions accessible to auction administrator device 16, or it may involve a search for financing functions at auction administrator device 16, participant device 12 and/or auction service provider device 24. Other sources of financing functions may also be provided.

**[0268]** Once any relevant financing functions and associated customized financing term(s) have been identified at 1606, processing continues at 1608 where the auction status is updated to reflect the bid with customized financing term(s). In particular, this status update may involve applying one or more financing functions to the bid received at 1602. In some embodiments, applying one or more financing functions may require reference to extrinsic data. For example, a financing function which requires identification of the current lease rate offered by a particular financial institution may require reference to a data source maintained by that financial institution. This reference may be performed in conjunction with processing at 1608. In some embodiments, other participants in the auction may view the status of the auction by submitting a status request or other inquiry. In some embodiments of the present invention, a participant viewing the status of the auction may be presented with a

status which has been modified by one or more financing functions associated with the participant. For example, a bidder who has established a leasing preference for a particular item in an auction who asks to view the current status of the auction will be presented with an auction status in terms of his leasing preference.

**[0269]** Processing continues at 1610 where a determination is made whether the bid received at 1602, along with any customized financing term(s) identified at 1606, is the current best bid of the auction (e.g., the bid which would "win" the auction if the auction were to close with no further bids). The current best bid is determined based on the type of auction and the rules of the auction. In some embodiments, processing at 1610 may include comparison of the bid received at 1602 with previously received bids which were submitted with one or more financing terms. In some embodiments, the different bids compared at 1610 may be compared based on the amount of the bid as well as the financing terms associated with each bid. For example, a seller may establish rules for an auction which indicate that a bidder making a cash bid will be preferred to a bidder submitting a bid involving a lease of the item offered in the auction. As another example, a seller may establish auction rules that indicate that a bid involving a lease will be preferred to a bid involving a loan. Other rules and comparisons may be established to select a best bid between bids that specify one or more customized financing terms.

**[0270]** If processing at 1610 indicates that the bid is not the current best bid, processing reverts to 1602 where the system awaits the next bid. If processing at 1610 indicates that the bid is the current best bid, processing continues at 1612 where a determination is made whether the auction has ended. If the auction has ended, the current best bid is the winning bid and processing continues at 1614 where the transaction is settled (e.g., by applying the customized financing term(s) identified at 1606). If processing at 1612 indicates that the auction is ongoing, processing awaits a current best bid at the close of the auction.

**[0271]** In some embodiments, the terms of the financing instrument may be binding on one or more auction participants. In these

embodiments, if the bid is identified as the winning bid or one of multiple winning bids, the customized financing terms which were established and applied using techniques of embodiments of the present invention are used to consummate the transaction (that is, if the customized financing terms establish and identify a particular lease as the preferred financing, the customized lease terms may be used to bind the buyer in the auction).

**[0272]** In other embodiments, the terms of the financing instrument may not be binding on one or more auction participants. In other embodiments, the terms of the financing instrument may be binding only on certain parties to the financing arrangement. For example, in certain embodiments, an auction participant may have the right but not the obligation to enter into a financing agreement specified during the registration process or otherwise prior to or during the conduct of an auction, while the provider of a financing agreement may be bound to enter into the agreement at the participant's option. In other embodiments, the terms of the financing arrangement may be binding only on an auction participant 12 identified as winning the auction, and not on the provider of the financing. For example, a financing arrangement may be offered by an auction service provider 24 on a "best efforts" basis, and said offer may not constitute a binding commitment to provide or to enter into the offered financing arrangement.

**[0273]** The particular financing functions specified and described herein have been selected for clarity of exposition, and do not represent all possible customized financing functions which may be established and used pursuant to the invention. The stage at the auction process during which financing functions are associated or bound with a bid or buyer or seller submitting the bid, or other entity as specified and described herein have been selected for clarity of exposition, and do not represent all possible auction stages when financing functions could be associated or bound.

## BIDDING AMONG DISPARATE ENTITIES

**[0274]** Applicants have recognized that the use of one or more transformation functions to transform bids and auction status to personalize the auction experience for multiple differently-situated participants will facilitate competitive bidding between these participants, resulting in overall reduced prices for buyers, and increased demand for sellers. Applicants have further recognized that such transformations may be used to facilitate bidding among participants from different geographical locations, from different industry segments, or differentiated by other participants' characteristics.

**[0275]** Referring to FIG. 17, as an example, a participant, such as participant 12a, may be associated with a transformation function 20a which transforms some or all of the bids submitted by participant 12a. For example, transformation function 20a may be a transformation that automatically applies information about participant 12a's geographical circumstances to each bid submitted by that participant (e.g., modifying the bid's currency and amount, applying specialized shipping rules, applying specialized export control rules, etc.). Transformation function 20a may also be a transformation that automatically applies information about the participant's industry segment to each bid submitted (e.g., setting forth particular quality requirements, industry-standard compliance, service and delivery requirements, payment requirements, other industry conventions, etc.). Transformation function 20a may also be a transformation that automatically applies information about the participant's auction administrator to each bid submitted (e.g., modifying the bid to reflect charges or fees that the participant's auction administrator charges participants in its auction, modifying the bid to reflect charges or fees of the primary auction's auction administrator, etc.).

**[0276]** Other participants may have different transformation functions associated with them. For example, participant 12b may be associated with a transformation function 20b that automatically applies different transformations to bids submitted by participant 12b in auctions conducted

pursuant to embodiments of the present invention (e.g., participant 12b may submit bids with different geographical and/or industry segment requirements). Use of such transformation functions 20 to modify bids submitted by participants allows disparate entities having different characteristics to competitively bid in the same auction. These transformation functions 20 may be associated with participants using a transformation binding process or registration process as described in co-pending applications referenced above.

**[0277]** Transformation functions 20 may also be used to modify, adapt, translate or otherwise transform information that is transmitted between auctions, between auction administrator devices, and between auction administrator devices and participant devices. For example, participant 12a may view the status of the primary auction after the status has been transformed by a transformation function 20d associated with participant 12a. Other types and uses of transformation functions 20 pursuant to the present invention will be discussed further below.

**[0278]** In one embodiment of the present invention, one auction (e.g., auction 22n) is considered the "primary" auction, while other auctions (e.g., auctions 22a-b) which refer bids or status requests to the primary auction are referred to as "secondary" auctions. According to one embodiment of the present invention, participants having different characteristics may competitively bid in a primary auction via one or more secondary auctions. The result is a system which enjoys participation from a wide variety of differently-situated participants. Depending on the item being sold, each auction 22a-n may act as either a "secondary" or "primary" auction. For example, auction 22a may be a "primary" auction for a particular item if the other auctions 22b-n do not currently have an ongoing auction for the item (e.g., bids received by auctions 22b-n for the item will be forwarded to auction 22a).

**[0279]** Still referring to FIG. 17, an example of an auction conducted using auction system 10 will now be provided to illustrate features of embodiments of the present invention. In the example, participant 12a is a Korean company wishing to purchase computer equipment at auction.

Participants 12b and 12c are German companies, and participant 12i is a U.S. company, each of which also wish to purchase computer equipment at auction. Each of the participants may have different requirements and equipment desires, including differences in export laws, delivery requirements, currency, or the like.

**[0280]** An auction service provider, a seller, or other entity, using techniques of embodiments of the present invention, may establish an auction system 10 which allows each of the participants 12a-n to competitively bid for industrial equipment against each other, despite the different geographical and other circumstances of each participant. As a result, each participant may enjoy greater auction savings and selection.

**[0281]** Auction system 10 includes, in this example, two secondary auctions 22a and 22b. Secondary auction 22a is an auction established for Korean bidders (including participant 12a). Secondary auction 22b is established and operated for German bidders (including participants 12b, 12c). For example, each secondary auction 22a, b may present auction information, inventory, and prices in the language and currency of the market served. In the example, each of these secondary auctions are established and configured to satisfy needs of a particular geographical market. Those skilled in the art will recognize that secondary auctions may also be configured to satisfy needs of a particular industry or market segment or the like.

**[0282]** In the example, each of the participants 12 are interested in purchasing computer equipment at auction (e.g., a specially-configured enterprise server computer). In the example, because the specially-configured enterprise server is a complex and expensive item, only auction 22n offers the item. According to embodiments of the present invention, the Korean bidder may bid on the item by submitting a bid to secondary auction 22a which then operates to forward the bid to primary auction 22n. According to some embodiments of the present invention, secondary auction 22a serves to both forward information and to apply transformation functions associated with participants 12 to primary auction 22n. As a result, individual auctions and auction administrators can provide access

to a greater range of items and can also serve the role of applying one or more transformation functions 20 to bids and status inquiries of participants. In some embodiments, each secondary auction may further have one or more transformation functions associated with it which are applied to information transferred between the secondary auction and the primary auction.

**[0283]** In the example, the Korean bidder (participant 12a) may wish to acquire an enterprise server, and may wish it to be configured in a particular way (e.g., with the Linux® operating system, and with a particular memory and processor configuration, and with a Korean user interface). Further, participant 12a may be subject to particular export control laws because the primary auction takes place in the U.S. Each of these particular circumstances of participant 12a may be applied to a bid or status request submitted by participant 12a using one or more transformation functions 20 associated with the participant, the participant's bid or other information related to the transaction. Similarly, the German participants 12b, c may submit bids on enterprise servers offered in the primary auction 22n via secondary auction 22b. Particular circumstances and requirements of each participant may be applied to the bid or status using one or more transformation functions 20 associated with the participant, the participant's bid or other information related to the transaction. For example, the German participants may submit their bids in German Marks, and may require a different server configuration and leasing terms than the Korean bidder. These particular desires may be applied to their bids using one or more transformation functions 20.

**[0284]** Participant 12i (not shown), in the example, may directly submit a bid on the enterprise server offered in primary auction 22n. The bid submitted by participant 12i may also be transformed using one or more transformation functions associated with the participant, the bid or other information associated with the transaction. As a result, a wide diversity of participants may participate in the auction for the enterprise server. By allowing bids to be forwarded from secondary auctions 22a, b, the volume of bids in the primary auction 22n is increased, thereby achieving better

auction pricing for both buyers and sellers of items. Further, through the use of one or more transformation functions 20, the particular requirements and circumstances of differently situated participants may be taken into consideration and assessed on a common basis.

**[0285]** In embodiments allowing bidding between disparate entities, participant database 200 described above may further include data specifying geographical and industry information about participants. For example, a further participant database 200 is shown at FIG. 18. Geographical information may be, for example, information identifying particular geographical information about the participant identified by participant identifier 202 which may be used in embodiments of the present invention to generate, identify, or otherwise apply transformation functions to bids and/or status inquiries submitted by or on behalf of the participant. Geographical information may be information provided by or on behalf of the participant indicating the country, region or area where the entity is located (which may be, for example, the entity's legal place of business) or the location where the item should be shipped, or the like.

**[0286]** Industry information may be, for example, information identifying an industry or industry segment in which the participant identified by participant identifier 202 functions. Industry information may include, for example, standardized industry codes (SIC) or other data used to specify a particular industry. In some embodiments, auction administrator 16 or other entities (alone or in combination) associated with system 10 (FIG. 17) may establish customized industry information for one or more auctions conducted using system 10. For example, an auction administrator 16 which conducts auctions of computer equipment which are frequented by participants having specialized industry requirements may establish customized industry information for each of the different industries. For simplicity and clarity of exposition, simple identifiers of industry segments are described as provided in participant database 200. Those skilled in the art will recognize that other types and sources of industry information may be used. Other fields and combinations of fields may also be used to provide and access information about different

participants in an auction. For example, in some embodiments, a field indicating membership in a particular group or organization may also be provided in participant database 200.

**[0287]** In some embodiments, where participant information is stored at different administrator devices 100 (e.g., where each auction stores its own participant information), participant database 300 may also include information identifying the particular administrator device 100 or auction in which the participant's information is stored.

**[0288]** In the table depicted in FIG. 18, participant information is stored in participant database 200, which is stored at or accessible by auction administrator device 100. In other embodiments, participant information (or some portion thereof), may be stored at other locations, such as a database stored at or accessible to participant device 12 or auction service provider device. In such embodiments, participant information may be requested from the device that is storing or has access to the information, or it may be requested by other devices in the system.

**[0289]** In some embodiments, further participant information may be specified to precisely identify appropriate transformation functions. This information could include, for example, information specifying the nature of the participant, such as participant business, industry, demographic, and psychographic information. Other information may also be provided, such as information identifying participant purchasing behaviors, including: historical bidding information, click stream and other response information from other Web-sites or exchanges, and purchasing behavior from other sales and distribution channels.

**[0290]** Still other information may be provided identifying participants or groups of participants, such as transaction histories in other sales and distributions channels, or transaction histories for sales or purchases of goods or services unrelated to items being offered in the present auction. This information may include information related to the future cost of servicing a particular participant, such as warranty and other terms typically provided to the participant in these and other transactions. Yet other information may be provided which identifies participant behavior

post-transaction, such as return rates or estimates of anticipated future transactions. Other information might also include information to ascertain participants' level of interest in a particular item, such as historical responses to sales inquiries about the item, or feedback provided by sales representatives or customer service representatives about the participant.  
Those skilled in the art will recognize that other information may also be provided which may allow the creation, selection and application of appropriate transformation functions for a particular participant or group of participants.

**[0291]** Referring now to FIG. 19, a table is shown representing an auction database 300 that may be stored at, or accessible to, auction administrator device 100 (FIG. 2) according to an embodiment of the present invention. The table includes a number of entries identifying one or more auctions that are operated by the auction administrator. The table also defines fields 302-308 for each of the entries. The fields specify information used to identify each of the auctions administered by the auction administrator, including for example: an auction identifier 302, an offeror identifier 304, an item identifier 306, and one or more bid rule(s) 308. The information in auction database 300 may be created and updated, for example, when an auction administrator establishes an auction using features of embodiments of the present invention. This information may be entered by an auction administrator operating auction administrator device 100. In some embodiments, the information may also be entered by other parties, such as a participant operating participant device 12 or a service provider operating an auction service provider device. As an example, in the system of FIG. 17, each of the auctions 22a-n may be defined in an auction database 300 stored in one or more auction administrator devices 100.

**[0292]** Auction identifier 302 may be, for example, an alphanumeric code associated with an auction administered by an auction administrator. Auction identifier 302 may be generated by, for example, auction administrator device 100.

**[0293]** Offeror identifier 304 may be, for example, the same as or related to participant identifier 202 of participant database 200. Offeror identifier 304 identifies the party in the auction identified by auction identifier 302 who is soliciting bids on an item. For example, in a sell-side auction, the offeror identifier 304 identifies a participant who has posted an item for sale via the auction identified by auction identifier 302. In a buy-side auction, on the other hand, the offeror identifier 304 identifies a participant interested in purchasing an item or items, and is soliciting bids from prospective sellers via the auction identified by auction identifier 302.

**[0294]** In some embodiments, offeror identifier 304 may identify an offeror that does not have a participant identifier (from participant database 200). In such cases, additional information identifying the offeror may be provided, for example, in auction database 300.

**[0295]** Item identifier 306 may be, for example, information identifying one or more items for which bids are being solicited in the auction identified by auction identifier 302. The information may include, for example, a product code such as a Universal Product Code (UPC) or other information particularly identifying the item(s). In the depicted embodiment, item identifier 306 simply includes an alphanumeric designator along with a brief description of the item. In other embodiments, further details of offered items may be specified to precisely identify items offered by auction. These details could include descriptions of product or service characteristics, images depicting a product or service, information about the manufacturer or provider of a product or service, information about delivery terms associated with a product or service, links to web pages with further information about the product or services, links to web pages with further information about the manufacturer or provider of a product or service, etc.

**[0296]** Bid rule(s) 308 may include information identifying one or more rules that govern the bidding process of the auction identified by auction identifier 302. For example, bid rule(s) 308 may include rules specifying a starting bid for the item, whether the auction is a forward or a reverse auction, whether the auction is public or private, whether bidding will be

anonymous or not, the type of auction (e.g., open cry, sealed-bid, Dutch, English, etc.), a minimum bid increment, a start time, an end time, a reserve price, etc. In some cases, these rules may specify other databases or database fields with further information required to process the rule. For example, if a rule specifies that an auction is a private auction, it might include a reference to another database specifying qualified participants in the private auction. Other rules necessary to govern the conduct of the auction identified by auction identifier 302 may also be provided in bid rule(s) 308.

**[0297]** In the example data shown in FIG. 19, one seller (participant identifier P1004) is soliciting bids in three different auctions for three different items (laptop computers, desktop computers, and work stations). Each of the auctions in which P1004 is soliciting bids are forward open cry auctions, with established starting bids and bid increments. Each auction also has specified starting and ending times. Another seller, P1001 is participating in auction B1001, while seller P1003 is participating in auction C1001, each of which are forward open cry auctions. Three different auction administrators are designated in the example data of FIG. 4 (designated as auctions “Axxxx”, “Bxxxx”, and “Cxxxx”).

**[0298]** Referring to FIG. 20, a table represents a further example of a transformation function database 400 that may be stored at (or accessible to) auction administrator device 100 (FIG. 2) according to an embodiment of the present invention. The table includes information similar to that in the database 400 described above. Further, other fields and combinations of fields may also be used to identify and characterize participants. For example, in some embodiments, a single “primary” auction may represent the composition of multiple sub-auctions. In this case, there would be an additional field describing a participant’s originating auction. Information about the originating auction could be used to identify geographical, industry, and other information about the participant. In certain embodiments, there could also be particular transformation functions directly associated with certain originating auctions or marketplaces.

**[0299]** Examples of different types of transformation rule(s) 404 which may be applied using embodiments of the present invention include rules which apply industry standard configurations, safety requirements, or terms (such as warranty terms, delivery terms, payment terms or the like), etc. Other types of transformation rule(s) 404 may apply geographical terms, such as currency, shipping, export rules, or the like. These transformation rule(s) may be established for a particular participant (e.g., the rules may particularly define specific geographical or industry segment needs for a specific participant), or they may be generically created for multiple participants (e.g., currency conversion may always be applied in an auction to transform a buyer's local currency to the functional currency or default currency of an auction).

**[0300]** In the example data in the table of FIG. 20, several transformation functions are shown which operate based on industry-related information (e.g., function F1001 applies if a participant is a Small Disadvantaged Business as defined by the U.S. Small Business Administration, and function F1003 applies if a participant is a legal services provider defined by SIC code 8111), and several transformation functions are shown which operate based on geographical-related information (e.g., function F1002 applies U.S. export control rules based on geographical information, and functions F1004 and F1005 apply currency conversion rules based on the participant's currency and the auction currency). According to some embodiments, application of a transformation function may depend on reference to extrinsic data. For example, application of function F1002 may require reference to current U.S. Department of Commerce Export Control rules (in the example, reference may be made to the current version of License Exception rules pertaining to the export of high-performance computers).

**[0301]** Transformation rule(s) 404 may be expressed in any of a number of different forms as described above. Transformation rule(s) 404 may further include rules establishing that a discount or other transformation be performed only if certain conditions are met. For example, some transformations may only be available to participants

dealing with a particular participant (e.g., a seller may grant a strategic partner discount to a particular buyer). Other transformations may only be available if the bid amount or other terms of bid meet specified criteria (e.g., a buyer may receive a discount if the offer to purchase amount is above a predetermined threshold). Those skilled in the art, upon reading this disclosure, will recognize that a number of other different types and combinations of transformation rule(s) 404 may be applied using features of the present invention.

**[0302]** Referring now to FIG. 21, a table is shown which represents a bid database 500 that may be stored at, or accessible by, auction administrator device 100 according to an embodiment of the present invention. The table includes a number of entries identifying bids similar to those depicted and described in conjunction with FIG. 6 above. The table depicted in FIG. 21 represents data stored at an example auction administrator device in a primary auction which has received bids from several participants via different routes (two bids received via secondary auctions, and one bid received directly from a participant in the primary auction).

**[0303]** For clarity of exposition, only a few exemplary bids are illustrated in the table shown in FIG. 6. As described in the definitions set forth above, "bids" as used herein may refer to either offers to purchase or offers to sell (depending on the type of auction operated), therefore, bid database 500 may record information about offers to sell (e.g., in the case of a buy-side auction), offers to purchase (e.g., in the case of a sell-side auction), or both offers to purchase and offers to sell (e.g., in the case of a two-sided auction).

**[0304]** Each participant in an auction may submit multiple bids and, therefore, bid database 500 may contain multiple entries for a participant in a particular auction. In the example data depicted in FIG. 6, bid data is shown for three different participants (buyers P1001 P1002, and P1005) bidding in four different auctions (auctions A1001, A1002, A1003 and C1001). In two of the auctions (A1003 and C1001), the bid was received

from participants via another auction administrator (e.g., via a secondary auction).

**[0305]** Originating auction administrator 505 may be, for example, information identifying a particular auction administrator which forwarded the bid identified by bid 506 to the primary auction identified by auction identifier 502. In the depicted example data, each auction administrator is assigned a different alphanumeric identifier (here, "A", "B" or "C"). As shown, a bid has been received in auction A1003 via the auction administrator referred to as "B", and a bid has been received from administrator "A" in auction C1001. Those skilled in the art will recognize that other types of identifiers and data may be used to associate received bids with the originating participant and the forwarding auction administrator.

**[0306]** Bid 506, may be, for example, information identifying a particular bid made by a participating buyer or seller. In the embodiment depicted, only information reflecting the current best bid in each auction is depicted. In some embodiments, data will also be stored indicating the bid history of the auction, including all bids received (whether or not a bid is the current best bid or not). The information in bid 506, in one embodiment, reflects non-transformed bid information. For example, referring to the first row of the table shown in FIG. 6, bid 506 made by participant P1002 is a bid to purchase two (2) lots of the item being auctioned in auction A1001 (reference to auction database 300 shows that item I1001 -- laptop computers -- are the items being auctioned) at a bid price of \$700/unit. Participant P1005 is bidding on desktop computers, while participant P1001 is bidding on computer workstations.

**[0307]** In some embodiments, there may be more than one current best bid or offer for each auction. For example, in some auctions, a single lot containing multiple items may be offered to multiple buyers. Bid database 500 may also be used to record former current best bids to provide a bid history or audit trail. For example, this information may be used to track the bidding history of different buyers and/or to award units being sold in the auction to a substitute buyer in the case where a current best buyer (or

group of current best buyers) is unable to settle their auction trade. In some embodiments, bid database 500 may also be used to record current bids that are not the best bid.

**[0308]** Transformation function 508 may be, for example, the same as or related to one or more transformation function identifiers 402 of transformation database 400 (FIG. 20). For example, depending on the bid, the participant, and the auction, one or more transformation functions may apply. In the example data shown in FIG. 21, the bid made by participant P1002 is transformed by transformation function identifier F1001 (applying a 10% Small and Disadvantaged Business credit). The bid made by participant P1005 in auction A1002 is transformed by the transformation function identified by identifier F1003 (applying a Legal Industry software configuration to the computers bid upon, and adjusting the bid price accordingly), while the bid made by participant P1001 in auction A1003 is transformed by transformation function F1002 (applying an Export Control License Fee to the bid amount). In the example data shown in FIG. 21, a single transformation function is associated with each entry. However, in some instances, there may be no transformation function associated with a bid by a participant in an auction, so there would be no entry in transformation function field 508 in bid database 500. In other cases, there may be multiple transformation functions associated with a single bid by a participant in an auction, so there would be multiple entries in transformation function field 508 in bid database 500.

**[0309]** Transformed bid 510 may be, for example, information reflecting bid 506 after application of transformation function 508. In the example data shown in FIG. 21, in the first row, the bid made by participant P1002 (\$700/unit) has been transformed by applying the 10% Small and Disadvantaged Business credit to arrive at a transformed bid of \$770/unit.

**[0310]** Current bid information 512, may be, for example, information identifying the current best bid in a particular auction. In a forward sell-side auction, the current best bid is the highest offer received. The best bid in a buy-side auction may be the lowest price offered for an item. Current bid information 512, may be, for example, information identifying a

current status of the auction identified by auction identifier 502. The nature and content of this information may depend on the type of auction. For example, in a typical Open cry, forward, sell-side auction, current bid information 512 may include a current high bid amount and a current high bid quantity.

**[0311]** Other information necessary or useful in identifying a current bid status may also be provided in current bid information 512 (e.g., the time of the current bid may also be provided). In one embodiment, this current bid information 512 represents the current bid status at a particular moment in time (e.g., upon receipt and processing of the current bid received by the participant identified by participant identifier 504 in the auction identified by auction identifier 502).

**[0312]** In the data shown in FIG. 21, current bid information 512 reflects the current best bid in the auction. This current bid information 512 may be provided to participants to reflect the current status of the auction (e.g., informing potential participants of the current best bid). In some embodiments, as will be described further below, current bid information 512 may be further transformed before it is communicated to certain participants.

**[0313]** Those skilled in the art will recognize that other types of data may be included in bid database 500. For example, other types of information may be required in different types of auctions. A two-sided auction may require tracking limit orders and may also require tracking the expiration date and time of the limit orders. Other types of auctions may allow submission (and thus require tracking) of bids that are contingent on the occurrence or non-occurrence of some event. Other system architectures are possible as well. For example, to improve system response times, historical bid information may be stored in a separate database.

**[0314]** The transformation binding process of FIG. 7 may be used to establish one or more transformation functions for use in auctions conducted pursuant to embodiments of the present invention. As an example, process 600 is a transformation binding process conducted to

establish transformation functions for use by a participant in one or more auctions conducted pursuant to embodiments of the present invention. In other embodiments, a similar transformation binding process 600 may be conducted to establish transformation functions used by all qualifying participants in an auction or auctions.

**[0315]** In some instances, such transformation functions may apply only to a single auction, while in other instances such transformation functions may be utilized in multiple auctions. In some embodiments, process 600 may establish transformation functions that apply to groups or classes of participants, rather than individual participants. In some embodiments, transformation functions established by process 600 apply to all bids made by a participant. In other embodiments, process 600 establishes one or more transformation functions intended for use with one or more particular bids by a participant or set of participants.

**[0316]** Participant information received at 604 may further include information such as geographical location information about the participant, shipping information, export information, import information, industry segment information, industry characteristic information, group characteristic information (e.g. membership in or affiliation with a group such as a religious organization, a non-government organization, a business entity, etc.

**[0317]** In one embodiment, this information may be solicited using a series of registration questions that are presented to the participant for response. For example, in embodiments where the participant is operating a participant device and interacting with an auction administrator device via the Internet, this information may be solicited by presenting the participant with a set of forms for entry and/or a checklist of options that may be selected by the participant. Other methods of soliciting and collecting information may also be used to establish transformation function(s). For example, third party databases may be accessed to collect some information. Such third party databases may include, for example: credit service bureaus, banks, rating agencies, export-import agencies, expediting firms, logistics providers, insurance companies,

medical agencies, check processing agencies, advertising agencies, motor vehicle departments, census bureaus, credit card agencies, governmental bodies, non-governmental organizations, non-profit organizations, or the like.

**[0318]** Once attribute information has been received at 604, processing continues to 606 where one or more transformation functions are established for the participant. Transformation functions may be established in any of a number of different ways. For example, an auction administrator operating auction administrator device 16 may establish a set list of transformation functions and qualifications for those functions. In such an embodiment, processing at 606 may simply involve matching the established transformation functions with participant attribute information received at 604 to identify those functions that apply to a particular participant. For example, a foreign company participant registering as a buyer of computer goods in an auction conducted for a seller in the U.S. may always be associated with one or more currency conversion transformation functions (converting bid and status information to and from the participant's bidding currency) and may sometimes be associated with export-control related functions (e.g., if the participant's country is on a U.S. government export control list). A participant who qualifies for a particular transformation function may be associated with the transformation function by, for example, storing information that is accessible to auction administrator device 100 that associates the function identifier 402 in transformation function database 400 with the participant identifier 202 in participant database 200.

**[0319]** Processing at 606 may include the establishment of a new transformation function as well. For example, a buyer participant may establish preferred shipping terms based on his geographical information. This preference may be defined in transformation function database 400 and associated with the appropriate participant.

**[0320]** The bid process 700 of FIG. 8 may be used in connection with disparate bidders as well. The bid received at 702 may include information identifying the particular auction and/or sub-auction in which

the bid is made, as well as information identifying the item bid on. The bid also typically includes terms of the bid such as a price term, a quantity term, a configuration term, and a delivery term.

**[0321]** Processing continues at 704, where one or more transformation functions associated with the bid received at 702 are identified. In one embodiment, one or more transformation functions are identified by auction administrator device 16 (e.g., by retrieving information contained in, for example, participant database 200, and/or transformation function database 400). A number of different techniques may be used to identify one or more transformation functions associated with a bid.

Transformation functions may be identified based on: an identity of the buyer, an identity of the seller (or a relationship between the seller and the buyer), an identity of an auction or marketplace in which a buyer or seller initiated a transaction, information about the seller, information about the item, information about the status of the auction, information about prices for comparable items in other markets, bidding history in the current auction, bidding histories in other auctions, and/or characteristics of the bid.

**[0322]** In some embodiments, bids or buyers (or sellers) may be associated with multiple transformation functions. In such cases, the transformation function(s) to be applied may be identified based in part on the other specified transformation function(s). For example, a buyer entitled to receive a special discount may not simultaneously be entitled to a volume discount credit. As another example, a buyer who has achieved a volume discount target may be entitled to application of a transformation function that waives an auction fee. In some cases, a transformation function associated with a bid may be identified based on a transformation function associated with a status request by the buyer (e.g., where the bid transformation function is the inverse of the status request transformation function). In some embodiments, a status request transformation function may be identified based on a bid transformation function. Transformation functions may also be identified and applied using combinations of any of the above factors.

**[0323]** In some embodiments, processing at 704 may involve checking multiple sources to identify relevant transformation function(s). For example, processing at 704 may simply involve a search for transformation functions accessible to auction administrator device 16, or it may involve a search for transformation functions at auction administrator device 16, participant device 12 and/or auction service provider device 24. Other sources of transformation functions may also be provided.

**[0324]** Once one or more transformation functions have been identified at 704, processing continues at 706 where a transformed bid is generated. This transformation may involve applying one or more transformation functions to the bid received at 702. In some embodiments, the transformation may require reference to extrinsic data. For example, a transformation function which requires conversion from one currency to another may involve reference to an external source of foreign exchange rate data. This reference may be performed in conjunction with processing at 706. The transformed bid is then presented as described above.

**[0325]** Referring now to FIG. 22, a transaction process 2200 pursuant to one embodiment of the present invention is shown. Generally, transaction process 2200 is conducted in a similar manner to the transaction processes described above. In some embodiments, as shown in FIG. 22, processing further includes identifying an auction involving a desired item. For example, referring to the system of FIG. 17, a participant operating participant device 12a may desire to purchase an item in an auction, and may submit information identifying the item to auction administrator 16a. If auction administrator 16a is operating one or more auctions in which the desired item is available, auction 22a will act as the primary auction to receive the participant's bid. However, if auction administrator 16a is not operating any auctions which offer the item desired by the participant, or if auction administrator 16a is not operating any auctions at all, auction administrator 16a will search other auctions (e.g., auctions 22b-n of FIG. 1) to determine if any other auction administrators 16 are conducting auctions involving the requested item.

Any such auctions will be identified at 2204. Details regarding the identified auction or auctions will be retrieved and presented to the participant.

**[0326]** Further, in the embodiment depicted in FIG. 22, the bid received at 2206 may include information identifying the particular auction and/or sub-auction in which the bid is made, as well as information identifying the item bid on. The bid also typically includes terms of the bid such as a price term, a quantity term, a configuration term, and a delivery term.

**[0327]** Processing continues at 2208, where one or more transformation functions associated with the bid received at 2206 are identified. In one embodiment, one or more transformation functions are identified by auction administrator device 16 (e.g., by retrieving information contained in, for example, participant database 200, and/or transformation function database 400). A number of different techniques may be used to identify one or more transformation functions associated with a bid. Transformation functions may be identified based on: an identity of the buyer, an identity of the seller (or a relationship between the seller and the buyer), an identity of an auction or marketplace in which a buyer or seller initiated a transaction, information about the seller, information about the item, information about the status of the auction, information about prices for comparable items in other markets, bidding history in the current auction, bidding histories in other auctions, and/or characteristics of the bid.

**[0328]** As noted above, in some embodiments, bids or buyers (or sellers) may be associated with multiple transformation functions. In such cases, the transformation function(s) to be applied may be identified based in part on the other specified transformation function(s). For example, a buyer entitled to receive a special discount may not simultaneously be entitled to a volume discount credit. As another example, a buyer who has achieved a volume discount target may be entitled to application of a transformation function that waives an auction fee. In some cases, a transformation function associated with a bid may be identified based on a transformation function associated with a status request by the buyer (e.g.,

where the bid transformation function is the inverse of the status request transformation function). In some embodiments, a status request transformation function may be identified based on a bid transformation function. Transformation functions may also be identified and applied using combinations of any of the above factors.

**[0329]** In some embodiments, processing at 2208 may involve checking multiple sources to identify relevant transformation function(s). For example, processing at 808 may simply involve a search for transformation functions accessible to a particular auction administrator device 16, or it may involve a search for transformation functions at other auction administrator devices 16, participant device 12 and/or an auction service provider device. Other sources of transformation functions may also be provided.

**[0330]** Other process steps generally occur as described above. According to embodiments of the present invention, this process and use of a transformed status allows participants to compete in the same auction despite participating in different originating auctions, or having different geographical and/or industry circumstances.

**[0331]** As an example of a status request processed using process 2200, referring to participant database 200 and transformation function database 400, if participant P1001 is the participant requesting status at 2210, processing at 2212 may involve a search of participant database 200 which will identify that participant P1001 is located in Karachi, Pakistan and is in SIC industry 5734. If the participant is seeking status in an auction involving certain export-controlled computers (such as auction A1003), processing at 2216 will determine that transformation function F1002 should be applied. Other transformation functions may also be identified (e.g., a currency conversion function such as F1004 or F1005 may also be identified), based on the participant's geographical characteristics, industry characteristics, group characteristics, or originating auction or marketplace.

**[0332]** Once a determination has been made that transformation(s) of the status are required, processing continues to 2218 where the identified

transformation function(s) are applied to the status. In an example where the status request is issued by participant P1002, processing at 2218 involves applying transformation function F1001 to the current status of the auction. If the current status of the auction is that the current best bid is a \$1,100 bid for a laptop computer, then the transformed status generated at 818 will be that the current best bid is a \$1000 bid (where the \$100 credit represents the 10% SDB credit that participant P1002 is entitled to). This transformed status is presented to the requesting party at 2220.

**[0333]** According to embodiments of the invention, transaction process 2200 may be performed a number of times during an auction. The result is a system that allows personalization of bids (including offers to purchase and offers to sell), and auction status information based on each participant's particular circumstances. As a result, differently-situated participants may take part in a single auction, with the bidding in the auction and presentation of auction status transformed to reflect their particular situations. In particular, embodiments of the present invention permit participants in different originating auctions or marketplaces, or having different geographical and/or industry circumstances to bid on goods or services in a manner that adapts to each participant's special circumstances.

#### CONFIGURING GOODS OR SERVICES

**[0334]** Applicants have recognized that there is a need for a system, method, apparatus, and computer program code for conducting auctions or competitive exchanges wherein participants having different item configuration desires may competitively bid against each other. The result is a system, method, apparatus, and computer program code which allows sellers to sell differentiated or mass-customized products in a competitive environment, achieving increased sales, prices and item liquidity for the seller. Buyers also benefit in that they will be able to acquire a greater number and type of items by auction, allowing the purchase of items in increased volume and perhaps at reduced prices.

**[0335]** According to some embodiments of the present invention, some participants in an auction are associated with one or more configuration functions 20. As an example, a participant such as Participant A (Buyer 12a in FIG. 1) may have an associated configuration function 20a which modifies some or all of the bids submitted by Participant A. For example, configuration function 20a may be a preferred computer configuration (e.g., all laptop computers purchased by Participant A should be configured with Microsoft® Windows 2000® operating system, a 20GB hard drive, and an internal CD R/W drive) applied to all bids submitted by Participant A in auctions in which Participant A is making a bid to purchase a computer. Other participants may have different configuration functions associated with them. For example, Participant B (Buyer 12b in FIG. 1), acting as a buyer in the same auction as Participant A may be associated with a different configuration function 20b that automatically applies a different configuration preference to Participant B's bid (e.g., all laptop computers purchased by Participant B should be configured with Microsoft® Windows Millenium Edition® operating system, a 30GB hard drive, and an internal 3.5" floppy drive). As a result, both Participant A and Participant B may participate in the same auction, even though each desires to purchase differently-configured items.

**[0336]** In this manner, the seller of the item in the auction is able to receive better pricing on items. Further, unlike prior auctions, embodiments of the present invention enable the seller to sell non-standardized items in an auction format. For example, it is believed that in previous auctions, the seller in the example set forth above would be unable to offer differently-configured laptop computers because the seller was unable to know in advance which features would be bid on by participants in the auction.

**[0337]** As a result, sellers in previous auctions often picked a small set of differently-configured items and offered each configuration for sale, hoping to attract sufficient bidders for each configuration. Embodiments of the present invention allow sellers to offer items for sale which are configured based on bids received at auction, while encouraging

competitive bidding among different participants having different configuration needs.

**[0338]** In some embodiments, configuration functions 20 may also be used to modify, adapt, translate or otherwise transform information that is transmitted from auction administrator device 16 to one or more participant devices 12. For example, Participant D may view the status of an auction after the status has been modified by a configuration function associated with Participant D. As an example, Participant D may desire to only purchase laptop computers configured with Microsoft® Windows 2000® operating system, a 10GB hard drive, an internal DVD drive, and a 1.0 GHz Intel® Pentium IV processor. That is, Participant D will see the current auction pricing based on Participant D's preferred configuration (which may be a different price than the price seen by Participant A or other participants).

**[0339]** Referring now to FIG. 2, a bid and status process 50 pursuant to embodiments of the present invention is shown. Process 50 will be described to illustrate certain features of embodiments of the present invention. Further details of embodiments of the present invention will be provided below. Process 50 involves interaction between a number of different participants in an auction, referred to here as Participant A, Participant B, and Participant C. As an example, process 50 involves different participants competitively bidding on laptop computers offered for sale by a seller in an auction operated pursuant to embodiments of the present invention. Each of the participants (A, B, and C) have registered to participate in the auction (in a process which will be described further below) and have established at least one configuration function identifying their configuration preferences.

**[0340]** For example, Participant A may have established a configuration preference for a bare-bones laptop system having no special features (e.g., the base laptop configuration may be defined by the auction administrator 16 as a laptop having an 800MHz processor, a 10GB hard drive, and a 8x CD ROM drive). This configuration preference may be indicated by Participant A during, for example, an auction registration

process and may result in the generation of a configuration function 20a associated with Participant A.

[0341] Participant B may indicate a preference for a customized version of the laptop, including a 1.0GHz processor, a 30GB internal hard drive, and a CD/RW drive. These configuration preferences are stored as a configuration function 20b associated with Participant B. Participant C may also prefer a customized version of the standard laptop, and may specify preferences such as a larger display and a longer-life battery. These preferences may be specified in a configuration function 20c associated with Participant C.

[0342] In the depicted process, Participant A is participating as a buyer in an auction and submits a bid (in this example, the bid is an offer to purchase) to purchase a laptop computer in the auction. This bid may be, for example, submitted to an auction administrator (not shown) running the auction. The bid is transformed by a configuration function 20a. In one embodiment, configuration function 20a is applied by software residing at the participant device 12a operated by Participant A. In another embodiment, it may be applied by software residing at auction administrator device 16. In another embodiment, configuration function 20a may be applied by software residing at an auction service provider device (e.g., item 24 of FIG. 1). In yet other embodiments, the function may be applied by software residing at an seller device (e.g., item 12n-z of FIG. 1). Other techniques for enforcing and applying configuration functions may also be used.

[0343] Upon receipt of the bid from Participant A, configuration function 20a is identified and is used to modify the bid, generating a transformed bid reflecting Participant A's configuration preferences. The dollar amount of Participant A's bid may be, for example, modified based on its customization preferences. For example, if Participant A bid \$1,000 for a laptop, the configuration preferences identified in configuration function 20a may be used by auction administrator device 16 to generate a transformed bid reflecting the cost of the customized configuration (e.g., by reference to a price schedule indicating price adjustments for each of the

desired features). Auction administrator device 16 may then compute a transformed bid price associated with the custom configuration and based on the customer's submitted offer amount. In the example, Participant A has indicated a preference for the standard, bare-bones configuration of the computer. As a result, the \$1,000 bid will not be adjusted based on configuration function 20a. When Participant A then views the status of the auction, he will see that the current high bid of the auction is \$1,000 for a laptop.

**[0344]** According to some embodiments of the present invention, Participant B will see a different auction status. In this example, if Participant B submits a request to view the status of the auction, his status request will be associated with Participant B's configuration function 20b and the current price of the laptop will be transformed based on configuration function 20b. In the example, the price will likely be higher, as Participant B has requested a customized version of the laptop. In one embodiment, auction administrator device 16, upon receipt of Participant B's status request, will identify the associated configuration function 20b, and perform a price look-up to determine the additional (or lesser) cost of the features requested by Participant 20b. The total cost, from a base of \$1,000, will be computed and presented to Participant B as the current status of the auction. For example, assuming that the additional features requested by Participant B are equal to an additional \$250, Participant B will be informed that the current high bid for the laptop is \$1,250 (the value of the current base bid plus the customized features requested by Participant B). Participant B may then choose to submit a bid if he so desires.

**[0345]** Participant C may undertake similar interactions, each of which will be transformed by the configuration function 20c associated with Participant C. The result is a system that allows multiple participants having different configuration needs to participate in the same auction or exchange. The result is a system that allows multiple participants having different standing to participate in the same auction or exchange.

Participant's special configuration needs are automatically applied to their bids and to their viewing of the status of the auction.

**[0346]** The databases described above may include further data used to apply configuration rules (which may be, for example, a particular type of transformation rule, in this section, "configuration rule(s) 404" is used interchangeably with "transformation rule(s) 404). Examples of a participant database 200, an auction database 300, a configuration function database 400, and a bid database 500 including example data illustrating configuration embodiments of the present invention are shown at FIGs. 23-26, respectively.

**[0347]** Referring to FIG. 25, configuration rule(s) 404 may be, for example, information identifying one or more rules that are applied when the configuration function identified by function identifier 402 is used. Configuration rule(s) 404 may include any of a number of different types of rules that apply item configuration preferences established by or on behalf of one or more participants in an auction. Examples of different types of configuration rule(s) 404 which may be applied using embodiments of the present invention include rules which are specified by a participant for a particular auction (e.g., in an auction for laptop computers, participants may specify a desired configuration for that particular auction). Other rules may be established by a participant for use in a number of auctions (e.g., a participant may specify a desired configuration for all laptops that it purchases in any auction). Yet other rules may be established by the seller, or jointly by the seller and the buyer.

**[0348]** Some rules may be established based on data such as, for example: the cost of the item(s); components or raw materials costs; finished goods inventory levels; component or raw materials inventory levels; work in process inventory levels; projected demand; projected volatility in demand; projected supply; projected volatility in supply; available capacity; projected capacity utilization; production pipeline; customer elasticity of demand; demand correlations for different item configurations; etc. Some or all of this information may also be used to establish a price for a particular configuration established for a buyer.

Other rules may be established which are applied based on one or more product or service quality attributes. Embodiments of the present invention may also be used to specify desired configurations of services sold at auction, desired configurations of bundles of goods, desired configurations of bundles of goods and services, etc. Those skilled in the art will recognize that a variety of different types of configuration rules may be established and applied using techniques of embodiments of the present invention.

**[0349]** In the example data shown in FIG. 25, buyers have specified desired configurations for particular types of items sold at auction (three rules are shown for laptop computers and two rules are shown for desktop computers).

**[0350]** Configuration rule(s) 404 may be expressed in any of a number of different functional forms, including, for example, in the form of a functional model, with associated model parameters. In such embodiments, entries in configuration function database 400 may include a transformation rule 404 describing the functional form of the configuration function, accompanied by at least one parameter associated with the transformational form.

**[0351]** Configuration rule(s) 404 may include rules establishing that a certain configuration preference be applied only if certain conditions are met. For example, some configuration functions may be specifically established for application in a particular auction, or for auctions conducted by a particular seller, or for particular goods or services. Other configuration functions may only be applied if the bid amount or other terms of the bid meet specified criteria (e.g., a buyer may wish to apply particular configuration rules based on the price or quantity of items being bid upon). Those skilled in the art, upon reading this disclosure, will recognize that a number of other different types and combinations of configuration rule(s) 404 may be applied using features of the present invention.

**[0352]** Configuration description 406 may be, for example, information describing the configuration function identified by function identifier 402.

Further, information at 406 could include information to be displayed to participants of the auction during the auction.

**[0353]** A configuration specification process may be performed similar to the process 600 depicted in FIG. 8 above. In some embodiments configuration specification process 600 occurs during a participant registration process. In other embodiments, process 600 is conducted separately to establish configuration functions for particular participants. In some instances, such configuration functions may apply only to a single auction, while in other instances such configuration functions may be utilized in multiple auctions. In some embodiments, process 600 may establish configuration functions that apply to groups or classes of participants, rather than individual participants. In some embodiments, configuration functions established by process 600 apply to all bids made by a participant. In other embodiments, process 600 establishes one or more configuration functions intended for use with one or more particular bids by a participant or set of participants.

**[0354]** In some embodiments, processing at 606 may involve the presentation of a number of different configuration choices to the participant, allowing the participant to select desired configuration choices. For example, if the item being configured is a laptop computer, the participant may be presented with configuration options available for laptop computers (e.g., screen size/type, processor speed/type, storage devices, peripherals, etc.). In some embodiments, the configuration choices may be presented in a manner that ensures that non-compatible configurations are not allowed (e.g., a participant will not be allowed to configure a laptop computer with an internal CD ROM drive if the particular model of laptop in the auction does not have an available internal CD ROM bay). Processing at 606 continues until one or more configuration functions associated with one or more items and the participant are established. The completed configuration function(s) may be associated with the participant by storing configuration rule(s) in participant database 200 and configuration function database 400 (FIGS. 4 and 6, respectively). Those skilled in the art, upon reading this disclosure, will recognize that

other techniques may be used to establish configuration functions for use in embodiments of the present invention.

**[0355]** A bid process may be used similar to the bid process 700 described above in conjunction with FIG. 9. Processing at 704, includes identifying one or more configuration functions associated with the bid received at 702. In one embodiment, one or more configuration functions are identified by auction administrator device 16 (e.g., by retrieving information contained in, for example, participant database 200, and/or configuration function database 400). A number of different techniques may be used to identify one or more configuration functions associated with a bid. In some cases, a configuration function associated with a bid may be identified based on a configuration function associated with a status request by the buyer (e.g., where the bid configuration function is the inverse of the status request configuration function). In some embodiments, a status request configuration function may be identified based on a bid configuration function.

**[0356]** In some embodiments, processing at 704 may involve checking multiple sources to identify relevant configuration function(s). For example, processing at 704 may simply involve a search for configuration functions accessible to auction administrator device 16, or it may involve a search for configuration functions at auction administrator device 16, participant device 12 and/or auction service provider device 24. Other sources of configuration functions may also be provided.

**[0357]** Once one or more configuration functions have been identified at 704, processing continues at 706 where a transformed bid is generated. This transformation may involve applying one or more configuration functions to the bid received at 702. In some embodiments, generation of the transformed bid may require reference to extrinsic data. For example, a configuration function that is established based on product costs, component or raw material costs, or other outside factors may require reference to external data and/or databases. This reference may be performed in conjunction with processing at 706.

**[0358]** Once the bid has been transformed, the transformed bid is presented to the auction as the buyer's bid. The transformed bid is then considered pursuant to the auction rules. For example, in a forward English auction, the transformed bid will be compared with the current best bid to determine if the transformed bid is greater than the current best bid. If it is, then the transformed bid becomes the auction's current best bid, and any subsequent bid must be greater than the transformed bid to be successful. In this manner, embodiments of the present invention permit a buyer's special circumstance (e.g., the buyer's desired item configuration) to be factored into the buyer's bid.

**[0359]** Configuration functions may be applied in transaction processes such as those described above. For example, a transaction process such as the process 2200 of FIG. 22 may be utilized.

**[0360]** At 2204, processing determines whether a configuration function is associated with the buyer (or the bid, the auction, or other information associated with the bid) who submitted the bid identified at 2202. According to embodiments of the present invention, certain configuration functions may be identified based on an identity of the buyer. For example, a particular buyer may have established (e.g., in a configuration function specification process 600 as described above) a configuration function to be applied to all bids made by the participant in the particular auction or for the particular item being bid upon. If processing at 2204 indicates that one or more configuration functions exist which should be applied to the particular bid, identified at 2202, processing continues to 2206 where the configuration function is applied to the bid. For example, if the participant is participant P1001 in the example data, and is bidding on a laptop computer offered in auction A1001, application of the configuration function at 2206 will result in a transformed bid that identifies P1001's desired configuration. In some embodiments, processing at 2206 may involve referencing pricing information to calculate a transformed bid price based on the desired configuration. In one embodiment, this pricing is based on a reference price (e.g., the price of a standard configuration item).

**[0361]** Processing continues at 2208 where a status of the auction is updated based on the transformed bid. Depending on the nature of the configuration function(s) identified at 2204 and applied at 2206, the transformed bid may be significantly different than the original bid identified at 2202. In some embodiments, the transformed bid may be slightly changed (or even remain unchanged) from the original bid identified at 2202. According to embodiments of the present invention, this process and use of a transformed status allows participants to compete in the same auction despite having different configuration desires.

**[0362]** In a typical auction, once a bid has been received and the auction status has been updated to reflect the current best bid, other potential buyers and participants in the auction will request a status of the auction. This remains unchanged in auctions conducted pursuant to embodiments of the invention. As shown in FIG. 22, a status request is received at 2210. Unlike previous auctions, however, processing pursuant to embodiments of the present invention includes a determination at 2212 of whether configuration function(s) should be applied to generate a transformed status of the auction. According to embodiments of the present invention, the status of the auction may be transformed based on configuration function(s) associated with a participant requesting the auction status to present a transformed status to some participants. Other participants may view non-transformed status.

**[0363]** According to some embodiments of the present invention, processing at 2212 includes making a determination of whether one or more configuration function(s) should be applied to the auction status to generate a transformed status for the requesting participant. This determination may occur in any of a number of ways. For example, in some embodiments, the status request received at 2210 may include an identification of the participant requesting the status. This information may be used to determine if a configuration function should be applied. Further, information about the auction and the item(s) being auctioned may also be used to determine if a configuration function should be applied.

**[0364]** As an example, referring to participant database 200 (FIG. 23), if participant P1001 is the participant requesting status at 2210, processing at 2212 may involve a search of participant database 200 which will identify that participant P1001 is associated with configuration functions F1001 ("P1001 Custom Laptop").

**[0365]** Once a determination has been made that transformation(s) of the status are required, processing continues to 2214 where the identified configuration function(s) are applied to the status. In the example where participant P1001 issues the status request, processing at 2214 involves applying configuration function F1001 to the current status of the auction. If the current status of the auction is that the current best bid is a \$1,000 bid for a standard-configuration laptop computer, then the transformed status generated at 814 will be that the current best bid is a \$1,075 bid (where the extra \$75 represents the extra cost of the laptop configured as specified by P1001 in configuration function F1001). This transformed status is presented to the requesting party at 2216. Presentation of the transformed status may be accomplished in any of a number of different ways such as, for example using XML or EDI transactions, instant messaging, e-mail, a Web-page, a telephone, facsimile, telex, etc.

**[0366]** In some embodiments of the present invention, only the transformed status will be presented to the buyer or seller at 2216. In other embodiments, however, both the transformed status and the untransformed status may be presented. In yet other embodiments, the transformed status may be presented in conjunction with a partially transformed status reflecting transformation by only a subset of the configuration functions that apply to the status request. In some embodiments, information about the configuration function applied to the status request is presented to the participant, while in other embodiments, no information about the configuration function applied to the status request is presented to the participant. In yet other embodiments, various combinations of transformed, partially transformed, or untransformed status information is presented, with or without information about the associated configuration functions.

**[0367]** If processing at 2212 indicates that no transformation of status is required (e.g., where the requesting participant does not have an associated configuration function or other transformation function), processing continues to 2218 where the status is presented to the requestor. This non-transformed status may be presented in any of a number of different ways, such as, for example, using XML or EDI transactions, instant messaging, e-mail, a Web-page, a telephone, facsimile, telex, etc.

**[0368]** According to embodiments of the invention, transaction process 2200 may be performed a number of times during an auction. The result is a system that allows personalization of bids (including offers to purchase and offers to sell), and auction status information based on each participant's particular situation. As a result, differently-situated participants may take part in a single auction, with the bidding in the auction and presentation of auction status transformed to reflect their particular situations. In particular, embodiments of the present invention permit participants to bid on goods or services that are specially configured for each participant.

**[0369]** Although the present invention has been described with respect to a preferred embodiment thereof, those skilled in the art will note that various substitutions may be made to those embodiments described herein without departing from the spirit and scope of the present invention. The particular transformation functions specified and described herein have been selected for clarity of exposition, and do not represent all possible transformations. The stage at the auction process during which transformation functions are associated or bound with a bid or buyer or seller submitting the bid, or other entity as specified and described herein have been selected for clarity of exposition, and do not represent all possible auction stages when transformations could be associated or bound.

**[0370]** The manner in which transformation functions are associated with a bid or buyer or seller submitting the bid, or other entity, as specified and described herein have been selected for clarity of exposition, and do

not represent all possible manners by which transformations could be associated or bound. Those skilled in the art will also note that although embodiments of the present invention have been described in the context of an auction or marketplace, certain features or embodiments may also apply to other forms of commerce and electronic commerce, including electronic negotiation, combinations of auctions and electronic negotiation, and various forms of interactions between and among various agents, including business entities, individuals, data processing systems, auctions, marketplaces, and intelligent software agents.